A TRANSITION PLAN FOR THE AGRICULTURE SECTOR IN IRAQ

Final Report: Volume 2

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FORWARD AND DISCLAIMER

This transition plan is intended to move the agriculture sector from Coalition Provisional Authority (CPA) responsibility to the Iraq Ministry of Agriculture (the Immediate Transition Plan) and to move the sector from a command and control production and marketing system to market-driven agricultural performance (the Medium-term Plan). The Plan has been assembled with the assistance of the Ministry of Agriculture (MOA) and the CPA by the United States Agency for International Development (USAID) contractor, Development Alternatives, Inc., under the Agriculture Reconstruction and Development Program for Iraq (ARDI).

This transition plan, immediate and medium-term, is not an agricultural sector strategy. The knowledge base is not sufficient, and the circumstances are too unsettled and unique to allow programming a course of action for the future of Iraqi agriculture based upon the very special conditions existing in 2003-2004.

The plan is deliberately general, setting forth the basic principles and recommendations for a revitalized, commercialized private agricultural sector. Details, data, and analysis are included in the Annexes and located by footnotes in the main text.

This plan, like almost all other in post-conflict Iraq, suffers from an absence of hard data on much of the agricultural sector. Wars, embargoes, and looting have effectively reduced the information base in 15 governorates to remembrances and estimates. Where data are presented, they need to be qualified as the "best available."

On many days the inability to move around freely in Baghdad and into the countryside has restricted the team's firsthand observation of current agricultural production and practices. We know there is much unutilized land under irrigation command, but do not have convincing answers as to why. Perhaps, as is probably the case, there is a multiplicity of answers, depending on the circumstances that have affected the particular land under consideration. The time to sort the influencing factors and determine cause and effect was not available.

As much as has been learned serves to demonstrate how much more there is to be discovered. In spite of the unknowns, the Transition Team has high hopes for the revitalization of agriculture and for the Iraqi farmers who have suffered greatly from past centrist and special interest policies.

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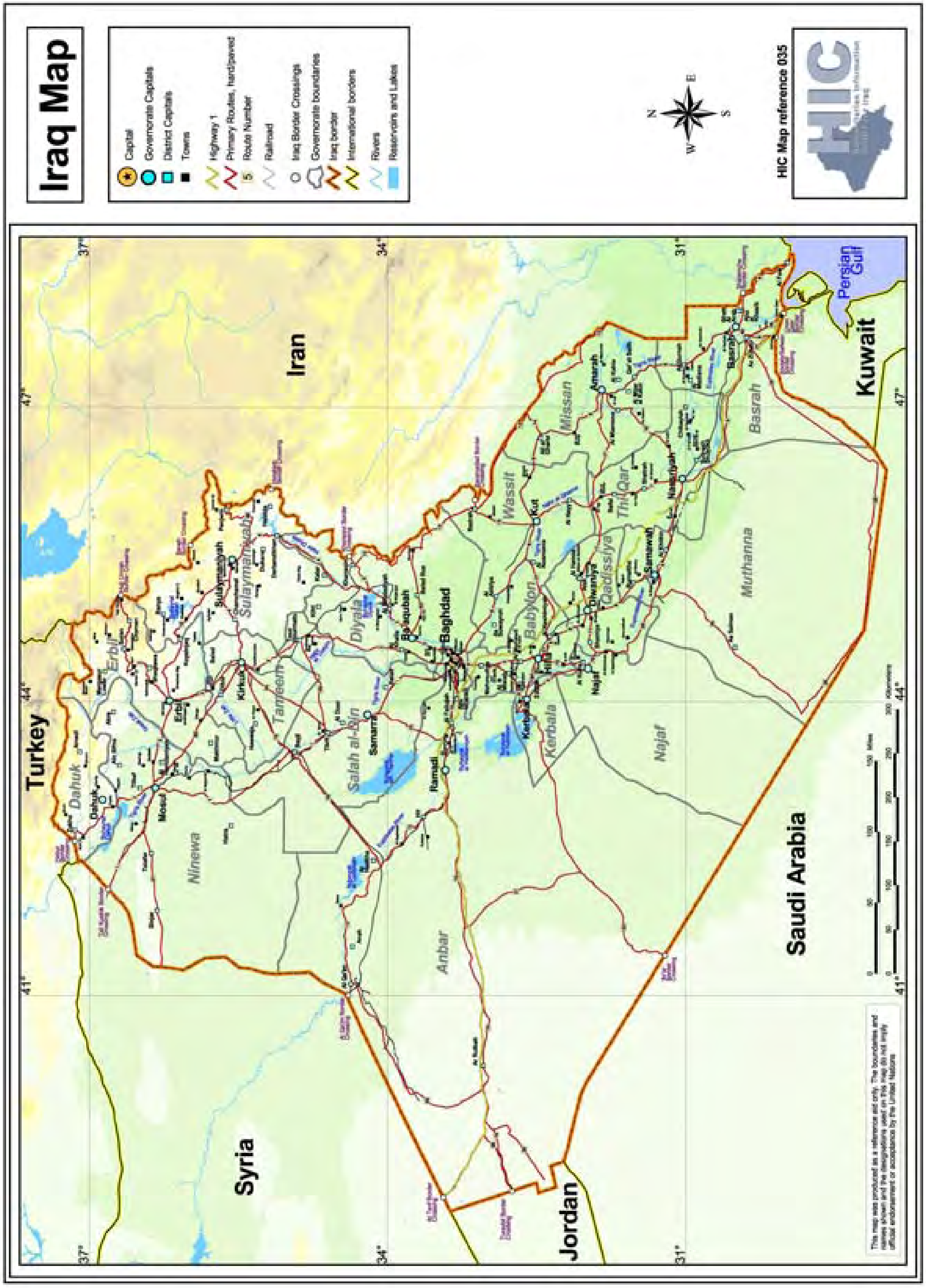
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EXECUTIVE SUMMARY

INTRODUCTION

The agricultural sector in Iraq has a set of resources, both physical and human, that could contribute substantially to the country's economic recovery and subsequent development. Iraq is rich in land and water and its climatic conditions are favorable to a wide range of crops. These resources, if rehabilitated and used properly, can improve Iraq's food security and gain considerable export earnings. Iraq has highly trained agricultural scientists who have suffered from a 20-year "science gap" and who are eager to move the sector into the 21st century.

Harnessing these resources and the energy of Iraq's people to make the country's agricultural sector productive again is the goal of this transition plan. The sector is faced with two basic challenges: 1) immediate and short-term recovery and rehabilitation of the agricultural infrastructure, and an end to those policies that prohibit recovery; and 2) medium- and longer-term implementation of policies and programs to strengthen the private sector to lead a market-based agricultural economy with strong support from the Government of Iraq (GOI). The goal is to create an environment in which the private sector, including farmers who take risks and make profits, and the public sector, providing governance and assistance, cooperate to achieve equitable growth.

SHORT-TERM STABILIZATION PLAN

The agricultural sector has fallen further behind in the postwar period. The war and its aftermath, including looting of many facilities, did substantial damage to the infrastructure. More importantly, the institutional and economic framework disappeared with the old regime and alternative mechanisms have not been activated to help agriculture recover. In 2004, the sector faces a bleak prospect in which production falls below pre-war levels and poverty in rural areas becomes worse than before. Activities and issues pertinent to stabilizing production levels and returning them to pre-war levels or better are discussed in the first part of this transition plan.

Providing agricultural input supplies. Farmers have insufficient quantities of inputs and what they have is poor quality. For decades, farmers have not had access to modern technologies, nor have their economic circumstances permitted them to purchase adequate supplies from private sector sources. In the postwar period, the situation with respect to inputs has worsened. In the winter season of 2003-2004, for example, only 8 percent of the estimated requirement of nitrogen fertilizer was made available to farmers in the 15 non-Kurdish governorates. To get this sector moving immediately, fertilizer, good quality seeds, proper pesticides, and other inputs, including electricity and diesel for machinery, must be procured and provided to farmers. The stabilization plan calls for the Ministry of Agriculture (MOA), with help from the Coalition Provisional Authority (CPA), to plan for the

procurement and distribution of inputs using the $200 million subsidy budget held in the Ministry of Finance. This process is underway. Farmers should receive badly needed inputs for the 2004 summer growing season.

Re-establishing the domestic market for wheat. To achieve rapid increases in production, it is essential that farmers receive prices that provide an incentive to produce. One of the main reasons for the rapid decline in production in recent years has been lack of demand for agricultural products at remunerative prices. The Ministry of Trade (MOT) has announced a purchase price of $180/ton for grade one wheat for 2004, and while this is below world market prices, it is a welcome increase over past years. But this is not enough to revitalize wheat production. The stabilization plan proposes that the MOT and the private sector begin an orderly transition from a wheat market characterized largely by direct government participation to a preponderance of market-based private sector participation. This will lead to farmers receiving international prices for wheat.

Reclaiming the natural resource base. The soil and water of Mesopotamia should form the base for highly productive agriculture, but they do not. Problems with waterlogging and soil salinity reduce cultivable land by at least 25,000 hectares annually. To halt this degradation of the resource base requires immediate rehabilitation of drainage systems and short-term improvements in on-farm irrigation. This work is ongoing and will take several years to complete. MOA should focus on rehabilitating on-farm canals and strengthening extension services to maximize the impact of rehabilitated irrigation systems.

Rehabilitating and re-equipping MOA facilities. On the eve of the 2003 war, the infrastructure that supported agriculture was in poor shape. What was there was almost completely destroyed in the aftermath of the war. Rapid recovery of the sector depends on rehabilitating numerous facilities that provide important support services to the farm community. The main priorities in the stabilization plan are reconstructing veterinary clinics in the 15 southern governorates to protect the national herd and repairing and re-equipping research and extension facilities to support the immediate transfer of new technologies to farmers. Further rehabilitation includes the following: a) restoring date palm nurseries to rebuild and protect Iraq's valuable date palm varieties; b) establishing quarantine stations to permit import and export of plant material and animals; and c) rehabilitating soil testing laboratories at the governorate level.

Establishing floor prices for maize and cotton. Production of maize and cotton will decline considerably this year due to lack of an assured market. These two commodities are considered strategic crops in Iraq because of their importance as inputs into industrial subsectors. To avoid sharp declines, the stabilization plan proposes that the GOI establish for cotton and maize floor prices below expected international prices but high enough to provide farmers an incentive to produce. The market would not be distorted by this action and the GOI enters only as a buyer of last resort.

MEDIUM-TERM TRANSITION PLAN

The medium-term transition plan has three components:

- Creating a policy environment for market-led growth;
- Building capacity in the MOA to support market-led agriculture; and
- Strengthening the agriculture sector through national programs.

Creating the appropriate policy environment. To move agriculture forward, the government must cede control of production decisions and focus on regulation, supervision, and certification of private sector activities. The legacy of government controls extends from input provision to output prices for "strategic" crops: wheat, barley, maize, and corn. Heavy government interventions have created enormous distortions in agricultural prices and markets. Efficient, wealth-creating production and marketing depends on a policy environment that treats the private sector as the foundation for sustained recovery and a platform for Iraq's re-entry into world markets. This plan includes specific actions and a timetable to disentangle the government from agricultural markets.

A transition period is necessary to move from where the sector is to where it should be. Some input subsidies—fertilizer, chemicals, farm machinery—must be phased out while national resources are protected through government provision of animal vaccines against epidemic diseases, fungicide treatment for wheat seed, spraying of date palms, and provision of soil testing services to allow customization of input recommendations. Export restrictions on major crops—all those included in the public distribution system (PDS)—and on animals add major complications that must be resolved.

Reform of the PDS is necessary for a healthy agricultural sector. The universal nature of Iraq's PDS has a two-fold damaging effect on the sector. First, free food for everyone dampens demand and thus prices for agricultural produce, hampering farmers' ability to earn income and increase production. Second, nearly all food for the PDS is imported; what is obtained domestically is purchased far below international prices. Energizing agricultural markets requires dealing with the politically sensitive issues involved in universal food distribution. This plan calls for two reforms of the PDS. The first calls for eliminating the market disincentives associated with the current limited and price-controlled domestic purchases. The plan includes a pilot program for voluntary monetization of portions of the food basket as a nondisruptive means of recreating the demand for domestic agricultural food forfeited to the PDS program. The second reform calls for gradually reducing the scope of the plan, so that it becomes a needs-based rather than a universal plan.

Enabling public sector capacity to support a market-based agricultural economy. In a new policy environment, the MOA requires institutional strengthening. The Ministry's job in the old agricultural sector was to distribute inputs and collect outputs. There was little focus on creating a regulatory environment to govern the sector. This plan will focus on reconstructing the rules of engagement between the private and public sectors to ensure production, marketing, and processing that is safe for humans and the environment, and to ensure the rights and interests of farmers are protected. For example, the plan includes activities to

develop and implement regulations in phytosanitary and sanitary protections, seed certification, pesticide marketing and application, and other regulations required in a modern agricultural economy. This includes training government officials who will be responsible for fair and transparent application of those rules and regulations. In addition, the MOA will need to develop capability in policy and economic analysis (to advocate for changes in policies that affect the sector) and in information management, data gathering, and information dissemination—new and important functions in a market-based agricultural economy.

The MOA will provide technical and marketing knowledge to farmers in Iraq who have not had access to modern inputs and technology. The isolation of the past decades has not permitted the sector to take advantage of international progress in agricultural technologies. In addition to taking steps to develop appropriate regulations for the sector, this plan includes steps to ensure technical and marketing knowledge becomes widely known in Iraq. The MOA will undergo a process of reorientation and retooling to support the needs of a private sector agricultural economy. It will provide world-class research and extension and services such as plant and animal disease diagnostics and soil testing. The goal of MOA is to support the growth and productivity of agriculture while overseeing the sector's health and safety.

Programs for development of the sector. In addition to policy reform and capacity building of the public and private sectors, the transition plan proposes that the MOA and other agencies in government and the private sector engage in national development programs to speed up the process of economic recovery. The MOA will need to establish the capability to coordinate donor activities so that donors work and contribute to a common agenda set through a collaborative process. This common agenda will take into account funds available from various sources, be they MOA internal funds or donor funds. Finally, in this transition plan, there is a specific proposal for the Ministry in Baghdad to work together with regional local authorities in the north. The agricultural policy issues in the northern 3 governorates are similar to those in the lower 15, and while agricultural development in the south is constrained by a set of obstacles very different from those in the north, approaches to solving problems and finding solutions can be usefully shared.

Development of financial resources for agricultural production and agribusiness. Formal financial markets are only beginning to recover in Iraq. In rural areas, effective financing of agricultural activities has been absent for many years. An injection of working capital is desperately needed by both farmers and agribusinesses to jump-start the agricultural economy into producing and processing efficiently again. The transition plan considers the immediate needs of the sector and options to assist in redeveloping a financial system that supports agricultural modernization.

National programs in wheat production, sheep production, and date palm restoration. Programs for developing these sectors are to be tested in two governorates to get the technology and delivery mechanisms right. Thereafter, successful programs will be expanded to other parts of the country. The activities proposed will make a major contribution to agricultural employment and gross domestic product (GDP) by replacing wheat imports with efficiently produced, high-quality domestic wheat, and will support export earnings through small-scale sheep production. The plan proposes a countrywide program in date palm

production, marketing, and export to combine the natural comparative advantage Iraq has in date production with activities to improve the competitive position of Iraqi date palms in international markets.

Reclamation of land and water resources. Sustained improvements in agricultural production require investments in land reclamation and improvements in water resources. Reclamation of saline soils is a long-term investment, but one that will provide substantial long-term benefits to the agricultural population. Irrigation improvements at the main system level will be accomplished through the Ministry of Water Resources, aided by contracts with the Army Corps of Engineers. We propose to develop pilot projects that will direct efforts to tertiary and on-farm improvements within the improved systems. Land reclamation and improved on-farm irrigation go hand in hand to assist in providing farmers maximum opportunity to respond to market forces.

Land privatization is a complicated and necessary concomitant of a market-led agricultural sector. Land is the fundamental resource for farmers and it should be held by private owners who can both improve the resource and capture the rewards at sale. This plan defines the scope of the issue and calls for the next step in understanding how to initiate necessary changes in the current system.

Protecting vulnerable groups as the market economy takes hold is a special responsibility for the new MOA and its partners in the development community. These groups—displaced families, the very poor, subsistence farmers—may be bypassed as the country transitions to a market economy. There are no easy methods to ensure those most deprived in the past will not be made worse off in the future. Because this is difficult, those involved with the transition must work that much harder to find organizational structures and mechanisms that will support vulnerable populations. The transition plan identifies various ways of reaching down into rural communities to provide necessary assistance.

CONCLUSION

The transition plan for agriculture is intended as a guide in moving from government control to an agricultural sector based on markets and led by private initiative. The MOA will provide strong support in policy and economic analysis, enforcement of regulations to protect human health and the environment, and research and extension. The private sector will invest and provide jobs and incomes for large portions of the population throughout the country.

Iraq has tremendously rich agricultural resources. With proper management of its soil and water and with good policies and regulations, agriculture will become an engine of growth for the entire Iraqi economy.

ANNEX 1

MAJOR ISSUES IN MARKETS FOR FARM PRODUCTS AND AGRICULTURAL INPUTS IN IRAQ

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BACKGROUND AND POLICY FRAMEWORK

BACKGROUND

The agricultural and agribusiness sectors in Iraq are the principal sources of economic employment in the country and are second only to the oil industry as contributors to the generation of national income. Iraq has the natural and human resources, management capacity, and market opportunities to develop a modern and competitive agriculture, capable of satisfying most of the food needs of the country and exporting high value products to countries in the Middle East and beyond. Unfortunately, decades of neglect, mismanagement, wars, and economic embargo have taken a toll on the sector. This transition plan hopes to make this potential a reality within the next few years by accelerating the emergence of a competitive sector, with farmers and livestock producers making production and marketing decisions based on market conditions rather than administrative commands.

THE EXISTING POLICY FRAMEWORK

Prior Agricultural Development Strategy

For the past several decades the agricultural strategy of the previous Iraqi Government was based on programs aimed at promoting certain strategic crops, chosen for reasons either of national food security or the expectation that they will generate industrial processing linkages. The emphasis given to wheat and maize reflected the priority of food security while cotton and sunflower were selected for their potential as industrial crops.

Once a crop is designated as strategic, the MOA implemented special programs targeted at selected regions or groups of farmers. The Ministry provided farmers with all inputs necessary for production of that crop at highly subsidized prices. Close technical supervision ensured that those inputs were used in the strategic crop, and for good measure, the Government also became the sole or main buyer of the crop. Administrative prices were set for both inputs and outputs so as to ensure private producers a profit. Market prices and the competitiveness of the crop played little role in government or farmers' decisions.

For the past fifteen years until the 2003 war Iraq was a closed economy for agricultural commodities, isolated from world markets. Prices of inputs and outputs were controlled, with the exception of prices for fruits, vegetables, and livestock products other than poultry. Production controls were used to ensure farmers produced and delivered their production to government buying agencies. Internal market controls restricted trade in most commodities and prevented diversion of inputs to unauthorized uses. An international trade embargo imposed by the United Nations in 1991 made all exports of Iraq's agricultural products illegal.

Effects of Economic Isolation

Twelve years of economic embargo had enormous effect on the agricultural sector. Thanks to its oil wealth, Iraq was a major food importer prior to the Gulf War in 1990. When the United Nations imposed a total trade embargo the country had to struggle to feed itself. Farmers were required to use all available land, water, and other resources for food production and surrender their production to the State, and a strict universal food rationing system was introduced. Despite draconian measures, major shortages emerged; widespread hunger, malnutrition, disease and mortality took a toll on the population.

The Oil-for-Food Memorandum of Understanding (MOU) with the United Nations in 1997 allowed Iraq to sell oil in the world market and use those revenues to purchase food and medicines. Later on other goods and equipment such as tractors, irrigation equipment, and veterinary medicines were also allowed. The UN World Food Program was charged with procurement of food in the international market and distribution of a food ration free of charge to the entire population through the Public Distribution System (PDS). Purchases of local Iraqi food were not allowed under the Oil-for-Food program. The entire UN food ration consisted of imported foods. One exception, however, was that the Government used local funds to purchase in country about one fourth of the wheat used in flour. The government continued distributing highly subsidized fertilizers and imported equipment to farmers to produce wheat and other strategic crops and also purchased output at artificially low prices.

The 2003 War created major disruptions in that system. Fertilizer production and distribution stopped. Widespread looting, war damage, and dismantling of the State brought the economy to a stand still. Purchases of wheat and other strategic crops stopped but the distribution of free food through the Public Distribution System continued uninterrupted and prevented major food shortages.

Legacy of the PDS

One year after the war the economy is slowly regaining its footing. In the agricultural sector the PDS program of free distribution of imported food remains the major impediment to the recovery. Much of the land, water, and labor available for farm production is idle because the PDS program prevents development of a domestic market for food. Shortages of electricity, fuel, and fertilizers also hinder farm production. Several attempts at transforming the free food distribution system into an income support system have been explored but not implemented for fear of the potential social disruptions and political consequences that tampering with the food supply might have. Many, including farmers, view access to free food as an entitlement and under the current uncertain circumstances they might react strongly against any attempt at reducing the food ration. A separate annex (Annex 2) provides more information and analysis on the Public Distribution System.

State Agribusiness Enterprises

In the absence of markets, the Government established many state enterprises to purchase and process strategic commodities. Thus, for example, the State Company for Industrial Crops (SCIC) was charged with promoting production of cotton and sunflower and to purchase the output from farmers. SCIC in turn transferred the cotton and sunflower output to other state enterprises for processing at administratively set prices. Mesopotamia Seed Company (MSC) was responsible for orchestrating the production of maize with other state companies and then purchasing maize on the cob from farmers; MSC in turn transferred the grain to the State Company for Animal Resources (SCAR) which in turn sells the grain to poultry farmers at highly subsidized prices. Poultry farmers were required to sell their eggs and broilers at controlled prices to the public.

The network of inter-connected state owned enterprises broke down after the 2003 War and is gradually being revived; the infrastructure and personnel of these state owned enterprises remain in place but they are not active for lack of funding for their activities. Nevertheless, private entrepreneurs have emerged to fill the void left by many of these state companies; poultry farmers for example, are getting maize and soybean meal from traders who are importing from neighboring countries and the world market. Private ginners and traders purchased cotton from farmers and exported to Syria.

In contrast, and surprisingly, most of Iraq's 157 wheat millers are presently private operators[1]. The government purchased wheat from farmers or imported it from abroad; millers were paid a processing fee, and the flour was distributed free of charge to the public. Similarly, poultry production was done by private enterprises, although they were dependent on the State for all inputs and then sold poultry products at controlled prices.

Fertilizer production was exclusively in the hands of three state-owned factories. Similarly seed production and distribution for the major field crops was mainly a State activity. These State monopolies are currently being challenged by traders importing competing products.

CONCLUSION

Government programs and policies are now in disarray. Private sector entrepreneurs have seized the post-war period as an opportunity to set up new businesses, find new trading opportunities, and perform services hitherto reserved for public agencies. But for the agricultural sector to become market based it is necessary for the Government to introduce policy changes with respect to input markets, controls over agricultural product markets, government direct participation in processing and markets, and restrictions on external trade.

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[1] For a discussion of flour milling and the government's entry into wheat milling operations see a separate section at the end of this annex.

AGRICULTURAL INPUT MARKETS

INTRODUCTION

For the last four decades, the Government of Iraq has intervened in agricultural input markets. In order to achieve goals of self-sufficiency or to counter the effects of economic sanctions and the UN Oil for Food program, the GOI, mostly through the Ministry of Agriculture, heavily subsidized many agricultural inputs. For some inputs, the GOI controlled distribution, and SOE's produced some inputs. Government policy towards inputs resulted in sub-optimal use, and elimination of private markets.

To restore a market and move towards rational use of inputs the government of Iraq, led by the MOA will plan for the phasing out of the following:

i. Subsidies;
ii. Public sector distribution of inputs; and
iii. Public sector production of inputs.

There will be a few exceptions for reasons of national interest, and the transition period will vary depending on the importance of the crop.

FERTILIZERS

Official Policy

In order to promote the production of strategic crops, the MOA provided highly subsidized fertilizers (said at 20 percent of cost) to farmers according to the amount of land planted to those crops. Wheat received the highest priority in the allocation of fertilizer. Barley, second to wheat in area planted during winter, also received fertilizer but only after the needs of wheat were satisfied. Recommended applications per donum of wheat in rain-fed and irrigated land are 30 kg of DAP and 60 kg of urea. Industrial summer crops such as cotton, maize, and sunflower were promoted under separate programs and were also given fertilizer allowances from the State Company for Agricultural Supplies.

Recommended Fertilizer Applications and Demand for Fertilizer, 2002

Crop	DAP Kg/donum	Urea Kg/donum	Area planted Donum	Fertilizer Needed Tons DAP	Fertilizer Needed Tons Urea
Wheat—rain fed	30	60	3,436,435	103,093	206,186
Wheat—irrigated	40	70	3,158,510	126,340	221,095
Barley—irrigated	30	25	1,108,770	33,263	27,719
Barley - rain fed	30	25	2,753,360	82,600	68,834
Sunflower	50	75			
TOTAL	33	50	10,457,075	345,296	523,834

Source: planted areas - Annual Crops and Vegetable Production Survey, 1998-2002. CSO, MOP.

During sanction years and before, Government inspectors frequently visited farmers to verify that the area planted to wheat was in fact planted, because farmers might plant less wheat and use the fertilizer for other crops such as vegetables for which there was no allocation. These restrictions date back to government programs to promote "strategic crops." They have the effect of removing market forces from farmers' production decisions and are major obstacle to market-based agricultural growth.

Before sanctions Iraq had installed fertilizer production capacity in excess of national demand, and exported fertilizer. Iraq still has sufficient capacity to produce nitrogen and phosphate fertilizers. There are three fertilizer factories (two for Urea and one for DAP or NPK). Production was suspended in March 2003 because of the war. The Ministry of Agriculture was ready to lend $12 million to the Ministry of Industry to start up the Basrah factory in exchange for delivery of fertilizer, but negotiations stopped when alternative funding became available. The Basrah plant has partially started producing urea but production in the other two plants has not restarted for lack of electricity.

Current Situation

Very little urea was available for farmers during the 2003-2004 cropping season. The shortage resulted from lack of local production of urea, and the inability of the UN Oil-for-Food (OFF) to import urea. The United Nations Oil-for-Food program contracted for delivery of urea in 2003 from two foreign suppliers who reneged on their contracts when world prices increased. The Ministry of Agriculture attempted to contract for emergency delivery of 100,000 tons in March and April 2004, but that transaction also was not finalized as of early April 2004. It any event it is too late for the winter crops.

In the absence of official supplies, private sector dealers are already selling imported urea from neighboring countries throughout rural markets at commercial prices. We have observed large displays of bags of urea in remote rural markets in Wassit Governorate and in the capital Kut. When Iraq restores fertilizer production in a few months, imported fertilizer might no longer be needed. However the emergence of a private sector fertilizer distribution network is welcome both because it demonstrates the entrepreneurship of Iraq's private sector, but also the willingness of some farmers to pay commercial prices for fertilizers.

Transition Options

Recommendation to restore private fertilizer market. In the 2004 Budget for the Ministry of Agriculture, CPA has allocated $200 million for agricultural inputs. The amount to be allocated for fertilizer subsidies is yet to be determined. For illustration purposes, $25 million would be sufficient to subsidize 250,000 tons at $100 per ton, or 500,000 tons at $50 per ton. (The world market price of urea in bulk is about $130/ton). This budgetary constraint imposes a limit on both the quantity of subsidized fertilizer and the level of subsidy. We propose that the Government announce a quantity limit that sends a signal to private traders that there is a market for supplemental fertilizer at commercial prices. It is proposed therefore that *Government limit its distribution of subsidized fertilizer to a given quantity, say, 25 kg of urea per donum, regardless of the crop planted.* Farmers can get their fertilizer allocations and then decide what the best use of that land is, and purchase the additional fertilizer from the private distribution network. The goals are (i) to empower farmers to make production decisions, and (ii) to enable the private commercial market for fertilizer develop and gradually take over that function away from public sector institutions.

The MOA is committed to the gradual phasing out of fertilizer subsidies over a four year period ending in 2008. With this in mind, this transition plan recommends that the MOA determine, before the beginning of the 2004-2005 cropping season, the quantities and levels of subsidies over the coming four years. This should be announced publicly to prepare the private sector to enter the market, to fill in the market as the government pulls out of it.

When domestic fertilizer production is restored it is hoped that the state-owned fertilizer factory will sell its production at international prices to both private distributors and domestic public sector agencies. Private distributors also need to be allowed to import fertilizers from other countries even though there is a national fertilizer production capability. According to the Agricultural Supplies Company imports are permitted if the Ministry of Trade issues an import license, which is done at the request of the Ministry of Agriculture.

Recommendations

- Ministry of Agriculture announces a limit on the quantity of subsidized fertilizer that it will distribute in 2004 and the level of subsidy per ton;
- The MOA distribute fertilizer to farmers based on area cultivated, letting farmers decide freely which crop to plant;
- The MOA plan for the complete phase out of fertilizer subsidies by 2008. The quantities and level of subsidies should be announced by the beginning of the 2004-2005 season;
- The state-owned fertilizer factories sell to private traders and the MOA at the same export parity price; and

- No restrictions are imposed on imports or exports of fertilizers, or on internal trade of fertilizers.

SEEDS DISTRIBUTION

Policy issues concerning seed production and distribution are:

- Opening up the market for some seeds to the private sector;
- Introducing improved seeds from international research centers, and
- Public/private sector production and sale of fruit tree seedlings.

Official Policy

The MOA's State Board for Seed Testing and Certification is the official body in charge of setting national policy for the development, testing, introduction, processing, and marketing of new seeds. The MOA State Board for Agricultural Research maintains a national network of experiment stations where it works on development of new varieties. Multiplication and distribution of varieties approved for distribution are the responsibility of the Iraq Seed Company. Iraq Seed Company makes arrangements with selected private farmers to produce commercial seed, under the supervision of the State Board for Seed Testing and Certification. Iraq Seed Company cleans, treats, and packages commercial seed for sale to farmers, either directly or through the State Company for Agricultural Supplies or the State Company for Industrial Crops.

Introduction of new field crop varieties requires at least two years of field trials by the Seed Testing and Certification Board to determine the suitability of the variety for Iraqi growing conditions before it can be released for commercial production. This policy discourages introduction of imported foreign varieties and severely limits the diversity of commercial varieties available to Iraqi farmers.

Government agencies have therefore been the only source of seed for the major field crops. There is no explicit prohibition of private sector involvement in seed marketing, but during the trade embargo commercial imports were not possible. The only exception has been the public distribution in the last few years of vegetable seeds brought into the country under the Oil for Food program. The main field crops—wheat, barley, cotton, rice and maize—are self- or open-pollinated varieties that maintain their productivity for several years. It is not therefore necessary for the Government to provide farmers with new seed every year if farmers can treat their own wheat seed against smut.

Current Situation

In terms of seed varieties and genetic improvements, Iraq's agriculture suffers from nearly two decades of State control and isolation from the rest of the world. Varieties currently in use for the main crops—wheat, barley, cotton, maize, and rice—date back many years; only for sunflower was a new local hybrid recently developed. Farmers normally select part of their production for planting next year's crop. Government agencies in charge of seed distribution mainly do cleaning and fumigating of ordinary seed before selling it back to farmers for planting. There is little genetic improvement content in the seeds for wheat, barley, rice, and cotton. In the case of maize, open pollinated varieties require replenishment every few years to maintain their vigor, but farmers ordinarily use last year's crop for seed.

At least three well-established private sector distribution networks for imported vegetables seed have emerged in Iraq, supported with technical advice and provision of agrochemicals, including pesticides and fertilizers. So far Government tolerates and is supportive of this private sector initiative in vegetable seed distribution.

Transition Policies

Making larger volumes of treated wheat seed accessible to farmers will help greatly to improving yields and the quality of wheat. In recent years farmers have purchased only small quantities of treated seed. Farmers apparently did not find it advantageous to purchase treated seed when wheat prices were fixed at a very low level. It is expected the higher floor price announced by the Ministry of Trade for 1st grade wheat will encourage farmers to use more treated seed. We also recommend that the Ministry of Agriculture expand the quantity of treated wheat seed produced, and subsidize part of the cost to farmers to encourage greater demand.

The MOA needs to review the prior requirements for testing of new varieties before registration and approval for distribution to determine whether they can be relaxed and speeded up, given the need to catch up and enable Iraqi farmers to withstand foreign competition. Valid public sector concern about new varieties introducing foreign pathogens into the country can be addressed through laboratory tests for the presence of pests, bacteria or viruses.

Rapid improvements in productivity are possible through the introduction of new foreign varieties, either brought in by private sector or official channels. For crops such as maize and cotton, private multinational seed companies are ready to introduce varieties that could be commercialized on short notice. International varieties of vegetable seeds are already widely sold in the country. The government can accelerate the introduction of foreign varieties by allowing their commercial distribution and establishing proper legal protection of the intellectual property incorporated in those varieties. Commercial hybrid maize varieties, for example, could be readily field tested to compare their performance with the open pollinated varieties currently in use.

Improved Varieties from International centers

Wheat, barley, and rice yields could benefit from introduction of varieties developed by international research organizations such as CYMMIT, ICARDA, or IRRI for similar agronomic environments2. Collaborative exchanges and testing of multiple foreign varieties are badly needed to provide farmers with wider choices of varieties. Iraqi plant geneticists can now be reintegrated with the international research centers and private international seed companies working on applications of new technologies for variety improvements.

In the isolation of the past 15 years from the world of genetic improvement, Iraq has missed the introduction of genetically modified varieties for some important crops like cotton, soybeans, and maize. Widespread introduction of pest resistant Bt cotton varieties across the globe has been one of the major genetic improvement successes in developing countries from China to South Africa to Australia and the United States. European countries are gradually accepting genetically modified foods, as demonstrated by the approval by the United Kingdom of GM corn varieties. Genetically modified cotton, soybeans, and maize varieties could accelerate the recovery of agricultural sector production and competitiveness, but testing and approval of GM varieties is not within the mandate of the Ministry of Agriculture. The Ministry of Science and Technology has an agricultural research section responsible for genetically modified varieties. Before any definitive decision is made on introduction of genetically modified varieties, the Government needs to do an in-depth assessment of the opportunities and risk implications for food safety, environmental impact, and potential export prospects for Iraqi products to other countries.

Distribution of Fruit Tree Seedlings

Restoration of Iraq's wealth of varieties of date palm trees is one of the top priorities of agricultural authorities. The Ministry of Agriculture with the support of USAID/ARDI is setting up a network of nurseries around the country to collect and multiply offshoots of date palms for sale and distribution to farmers. Similar efforts might be necessary for other fruit trees, particularly oranges and tangerines, but extreme care is needed to ensure that new seedlings are not carriers of viral diseases, and that they are true-to-type, i.e. are derived from stock identified to a certain variety. The College of Agriculture and the Ministry of Agriculture's research and extension facilities are needed to develop tissue culture techniques for rapid multiplication of disease free propagation material. Private sector involvement in propagation of tree seedlings is desirable and easily arranged for once the original sources are set up.

Recommendations

- Expand wheat seed treatment to cover a much larger share of area;
- Test new varieties developed in international research centers;

[2] See Annex 5 for a discussion on on-going crop demonstrations of selected ICARDA seeds.

- Expedite import and carry out tests of commercial hybrid maize varieties;
- Test genetically modified (Bt) varieties of cotton and maize under controlled conditions; and
- Involve private sector in propagation and sale of fruit tree and date palm seedlings.

PESTICIDES

Official Policy

According to Plant Protection officials throughout the 1990's and until the outbreak of the 2003 war, the Government was the only source of pesticides for agriculture and their costs was almost entirely subsidized. Demand for pesticides increased rapidly after the UN imposed embargo in 1991, as the need to grow more food required planting more wheat area than before. After introduction of the Oil for Food program it was not as necessary to produce as much wheat and the demand for pesticides could be met with imported materials. A state-owned factory for producing pesticides was bombed several times. Under normal conditions, demand for pesticides in Iraq is a multimillion dollar business including insecticides, fungicides, herbicides, and nematocides.

The Ministries of Agriculture and Health published in 2002 a registry of approved pesticides: "Pesticides Used and Registered in Agriculture and Public Heath in Iraq," compiled by Prof. Dr. Ibrahim Jadou Al-Jboory, Hashim Ibrahim Awad (MOA), and Salah Majeed Kasal (Min. Health, deceased). Ministry of Agriculture, Baghdad, 2002. The registry includes a description or each pesticide, its chemical formula, scientific and commercial names, approved uses, recommended dosage, toxicity, and maximum intakes. Once a pesticide is registered importers can get a license by filling out a questionnaire and paying a small fee. The Committee has a Pesticide Analysis Laboratory that is located on the grounds at the Agricultural College.

The main public sector use of pesticides is for seed treatment for wheat, barley and maize. These are mostly fungicides, but can also include mixing with insecticides. Smut is the biggest concern with wheat and barley, and the treatment is coating seed with fungicides before planting. It is a systemic fungicide that persists in the plant through most of its life.

Spraying date palms is another major use of insecticides in the country, using either helicopters or fixed wing aircraft with using ultra-low-volume sprayers. During the imposition of no-fly-zones date palm spraying came to a near halt, but it is now being resumed. For vegetables and fruit orchards, other than date palms, the government has played little or no role in the past.

Current Situation

Government's participation in the importation and distribution of pesticides seems increasingly challenged by private operators and the establishment of commercial distribution networks reaching farmers. All the major international players in the pesticide field are now present in Iraq: Dow (USA), Syngenta (Swiss), Dupont (USA), Bayer (Germany), Monsanto (USA), Novartis, FMC (USA), Dupont and Uniroyal, BSF and Cynamide. Syngenta has been especially effective in winning tenders by CPA, and has an established relationship with the Agricultural Supplies Company.

Who advises farmers on the use of pesticides? Iraq's extension service is insufficient for the needs of the country and probably not technically qualified to advise on pesticides. Several international companies are engaging the services of Iraqi experts and technicians to promote their products for both livestock and plant protection and have set up agrochemical supply stores.

Transition Options

There is general consensus at the Ministry of Agriculture that pesticide subsidies need to be phased out gradually. There are discussions about the Ministry of Agriculture plans for farmers paying a price 25 percent below cost in the coming season, but no final decision has been made. Official pesticide use will go mainly for seed treatment of wheat seed and for aerial spraying of date palms. Distribution of other pesticides used in agriculture can be handled by the private sector.

In the cases of wheat seed treatment and date palm tree spraying there exists major justification for maintaining Government involvement, because neighbors benefits from farmers treating their fields, and palm spraying requires aircraft. In wheat it is anticipated that Government will continue providing fumigated seed in the next few years or until private sector companies can enter the wheat seed treatment. There are unconfirmed reports that the CPA has assigned 5 helicopters for date palm spraying.

Cotton is another crop that normally requires considerable amounts of pesticides but this year the crop area is not expected to exceed one third of the estimated 45,000 hectares planted in 2003. Integrated pest management techniques have been effective in other Middle Eastern countries in reducing pesticide use in cotton.

Recommendations to ensure private sector pesticide market. The MOA and the private sector should reinforce the current trend of the private sector taking over the roles of importing and distributing pesticides at market prices. We recommend that the MOA eliminate pesticides subsidies over time, with the exception of fumigation of wheat seed and aerial spraying of date palms. The proper role of the government is to regulate and monitor the use of pesticides to ensure human and environmental health. To this end, the MOA will be responsible for working with the private sector to keep its pesticide registry up to date, and improve testing facilities and capabilities to fulfill its role of regulator.

Recommendations

- Strengthen Government's capability to do date palm spraying;
- Expand the wheat seed treatment program;
- Welcome the participation of private sector importers and distributors of internationally recognized pesticides;
- Monitor pesticides use and safeguards;
- Update MOA's registry of approved pesticides with new entries;
- Enhance laboratory testing capabilities to measure pesticide residues in common foods. (See a separate Annex on the Ministry of Agriculture's role in pesticide control); and
- Promote widespread use of integrated pest management in cotton.

VACCINES AND VETERINARY SERVICES

Official Policy

Iraq's animal vaccines production capacity was destroyed during the 1990's as part of the United Nations measures to preclude production of biological weapons. The foot-and-mouth vaccine factory in Baghdad used to produce high quality vaccines that were reportedly exported all over the world. In the years under the Oil-for-Food program Iraq was allowed to import and distribute certain animal vaccines under strict control of the United Nations. An outbreak of foot and mouth disease in 1998 caused high mortality among sheep, goats, and cattle, but was brought under control. Government policies and programs are still affected by that experience.

Current Situation

The Veterinary Services Company is responsible for monitoring animal health and organizing the national vaccination campaigns. It has one veterinary hospital in each Governorate supporting a network of 215 district level veterinary clinics across the country. Vaccines are distributed exclusively through the network of official veterinary clinics, which employ over one thousand official veterinarians. Coverage of the livestock herd is insufficient, however, and animal health authorities fear that another outbreak could have serious consequences if not detected on time. Diagnostic laboratories are also urgently needed to help in early detection and treatment of contagious animal diseases.
Many of the 8,000 veterinary graduates in the country are unemployed or working on unrelated activities, but the Veterinarians Syndicate (Union) reports that there are about

2,000 private veterinary clinics operating in the country, complementing and competing with the public sector veterinarians. Access to equipment, vaccines, and medicines are their principal constraints. After the lifting of economic sanctions private distribution networks for veterinary medicines have emerged. There are in governorate capitals and other rural centers veterinary bureaus and shops providing equipment, medicines and advice to livestock owners, some of them operated by women veterinarians.

Importation of animal vaccines and medicines is technically the exclusive domain of the Veterinary Services Company but fortunately for private sector veterinarians this monopoly is not being enforced at the moment.

Transition Options

One of the priorities for the recovery of the livestock sector is the rehabilitation of the production capacity for vaccines for the major animal diseases, especially for foot and mouth disease.

We recommend that the Ministry of Agriculture maintain the subsidy and rapidly expand the coverage of vaccinations against major animal diseases to protect the national herd. Coverage can be increased by taking advantage of the network of private veterinarians. Unfortunately, current policy restricts the distribution of vaccines to official channels only. Relaxing this restriction would benefit livestock owners, veterinarians, and government services.

Livestock owners, particularly poultry producers, need a rapid response capability when treating their flocks for contagious diseases; public sector veterinary services are unlikely to provide such quick response. There is ample room for complementarity between services provided by public and private sector veterinary clinics. Reduction and eventual elimination of subsidies on veterinary medicines will enhance the viability and effectiveness of private veterinary services.

Artificial insemination provided by the Veterinary Services Company has come to a halt because sires and facilities were looted or destroyed in the aftermath of the 2003 war. It is possible to resume artificial insemination services for cattle using imported semen, but this is done best by the few private sector specialized dairy herds. Most of the cattle herd in the country is dedicated to the production of male calves for fattening and slaughter, not to milk production. Barley is planted and cut as green forage, but most cows graze in open range and produce meager volumes of milk. Seldom are cows kept confined and fed a nutritious diet compatible with high milk production. Improved genetics in the absence of improved management and nutrition are probably not effective in raising productivity and income. International dairy AI companies such as ABS Global or Carnation can be encouraged to market their superior genetics and services to the few specialized dairy herds in Iraq, or to upgrade the national herd with dual-purpose breeds.

Recommendations

- Continue to subsidize and expand the coverage of vaccines to protect the national herd;
- Restore the capability to produce and export foot-and-mouth disease vaccines in country;
- Continue allowing importation of commercial veterinary medicines from reputable producers for use by private veterinarians;
- Distribute vaccines for contagious animal diseases to private veterinarians;
- Phase out subsidies on veterinary medicines distributed by official veterinary clinics; and
- Encourage private sector artificial insemination services in dairy cattle using imported superior dairy genetic material.

PRODUCTION AND MARKETING OF AGRICULTURAL PRODUCTS

WHEAT

Official Policy

Cereal production became has been a priority for several decades in Iraq but became urgent during the years of the international trade embargo. The Government's core strategy was to designate "strategic agricultural crops" and to channel resources to promote the production of those particular crops. Wheat was, and is, by far the most important of those strategic crops. Providing subsidized inputs and guaranteed producers price were ways of increasing production and raising yields. Access to fertilizers and other inputs was conditioned on farmers' area planted with strategic crops, primarily wheat. This general approach predates the trade sanctions of the 1990's but was more strictly enforced in that period. However, because most agricultural inputs can be diverted for other uses or sold for a quick profit, it was necessary to require that the inputs be used for the specific strategic crop and to prosecute violations with appropriate penalties. These enforcement mechanisms are expensive and subject to corruption. Policing that subsidized fertilizer and other inputs given for wheat are not used in other crops is highly intrusive and ineffective.

Much has changed in the agricultural sector following the 2003 War, but wheat continues to be classified as a strategic crop and farmers' access to subsidized inputs remain conditional on wheat planted area, at least officially. Enforcement of input use, however, has been suspended, in part because few subsidized inputs were distributed in 2003.

Current Situation

Wheat is the principal crop in the country in terms of area planted and crop value. It is grown mainly in the northern Governorates under rain-fed conditions, but also in Central and Southern Iraq under irrigation during winter months. Estimates of area planted and wheat production are subject to a wide range of variation. Barley is often planted alongside wheat by most farmers as forage for their livestock.

There are six main varieties out of 15 that have been released that are multiplied by the State Board for Seed Testing and Certification and other research stations such as IPA, which has released IPA 95 and IPA 99 varieties. Seed is sold to farmers as a single variety, although mixing is said to have taken place at the multiplication stage.

Seed Treatment

Seed is purchased by the State Board for Seed Testing and Certification and treated. It is multiplied by farmers under supervision of the STCB, purchased, cleaned, treated, bagged and offered for sale to farmers. The estimated selling price in 2004-2005 is $280/mt compared to a purchase price of $180/mt for the 2003-2004 crop. The quantity of treated seed available is sufficient for only a fraction of the wheat planted area. At full capacity the Seed Testing and Certification Board can supply 25-percent of treated seed required. According to plant protection officials, most farmers use their own untreated seed to plant next year's crop. Treated seed has been fumigated with fungicides that provide a systemic protection against smut, the main problem with the crop. Untreated seed results in plants susceptible to attack by fungus and the quality of grain suffers as a result.

Blend of Imported and Domestic Wheat

To produce flour for the food distribution program the Ministry of Trade provides flour mills in theory with an average blend of 60 percent imported wheat and 40 percent local wheat. There is not sufficient domestic wheat suitable for flour to make up 40 percent of the 3.2 million tons required for the PDS program. The MOT plans to increase the proportion of imported wheat in the PDS flour to 75 percent because they perceive consumer preference as in favor of imported wheat flour. The principal rationale reported for blending is the need for dough to stick to the wall of ovens used to make local bread. High gluten content is needed and some local wheat is apparently low in gluten. Low gluten is a function of the varieties grown and poor grain quality. Top grade quality wheat can be used to make flour without blending with imported wheat. Grain quality is a function of many factors affected by the production, harvesting, and post-harvest handling process. Using treated seed, herbicides, and fertilizers are necessary to obtain high grade wheat.

Grain Quality and Structure of Prices

The poor quality of wheat is also a major source of complaints by Government and millers, and it is mainly due to the high presence of smut (carbon) in the grain, but also presence of foreign matter, weeds, dirt, and other grains. Most of the harvest is done by combine and therefore can include seeds from weeds or other plants in the field. A large proportion of the grain delivered to the Government by farmers is grade 4, which is unfit for human consumption but can be used as animal feed for ruminants. No data on grade percents were found; estimates of the proportion of Grade 4 wheat vary widely but 33-40-percent seems to be the most common. Poor grain quality is also partly attributable to deficiencies in the structure of official prices for wheat. Relatively small price differentials between grades fail to encourage farmers to strive to improve grain quality. For example, the announced price for grade 1 wheat is $180 per ton, and for the lowest grade 4 it is $130. The likely outcome is that farmers deliver their lowest quality grain to the Government and the better grades to private traders and millers. If the Government simply refused to accept the lowest quality

grade or paid a price comparable to grain for animal feed such as barley or sorghum (currently under $100/ton) farmers would have greater incentive to grow high quality wheat.

Transition Options

Reducing Subsidies

Opening the borders to international trade affects product prices for wheat, maize, rice, and other farm and livestock products. When prices are higher in neighboring countries, products flow out of the country. In the absence of trade restrictions internal prices are roughly equivalent to international prices. However, given the dramatic changes that have taken place in the past year in the agricultural sector, farmers need a transition period to make gradual adjustments to the new conditions. Even though prices for most farm outputs have increased after the 2003 war, sudden removal of input subsidies is neither possible nor desirable; there is consensus, however, that the subsidy on fertilizers and other farm inputs will be phased out during the next few years.

The new Trade Liberalization Law issued by CPA on February 26, 2004, prohibits exports of wheat and flour unless the Ministry of Trade issues a license authorizing the export. This restriction applies to all products included in the PDS food basket, and it is intended to prevent products imported by Government and distributed at zero cost to consumers from being taken outside the country. Criteria used by the MOT to grant an export license are not specified but it will be difficult to distinguish between imported from domestic wheat, and flour made from domestic wheat. If wheat exports are not allowed farmers have to take the fixed price offered by Government, which is lower than the expected world price equivalent.

Price Support

The Ministry of Trade buys wheat directly from farmers at fixed prices. This is a source of concern because buying, processing, and storing grain are activities that private sector operators perform far more effectively and at a lower cost than Government agencies. The Government can replace its system of fixed prices with a system of open market prices combined with a support price program to protect wheat farmers from precipitous drop in world prices. Also, as much as possible Government agencies should stay away from handling the wheat crop directly. The Government can introduce a guaranteed floor price that protects farmers from exceptionally low market prices. In those years when market prices fall below those thresholds, Government could compensate farmers for the difference between the floor prices and market prices, without buying the product itself. Mechanisms and procedures to monitor quantities and grades delivered by farmers need to be set up, but they are less intrusive and distorting of markets than direct involvement of public agencies. However, even if the Government buys at the floor price and subsequently sells at market prices it is better than the fixed prices used now.

Demand for Wheat.

Wheat Balance. Requirements and production expectations for 2004

Item	Blending ratio: Imported—Local		
	60% - 40%	75% - 25%	50% - 50%
Population	25,000,000	25,000,000	25,000,000
Flour ration, kg / person / month	9.00	9.00	9.00
Flour Required, tons/month	225,000	225,000	225,000
Flour required, tons/year	2,700,000	2,700,000	2,700,000
Extraction rate (flour/wheat)	80%	80%	80%
Wheat required, tons/year	3,375,000	3,375,000	3,375,000
Percent imported	60%	75%	50%
Percent domestic	40%	25%	50%
Imported wheat required, tons/year	2,025,000	2,531,250	1,687,500
Local wheat required, tons/year	1,350,000	843,750	1,687,500
Expected wheat production, tons	1,500,000	1,500,000	1,500,000
Percent of edible grades	50%	50%	50%
Local wheat available, tons/year	750,000	750,000	750,000
Excess (Deficit) production, tons	(600,000)	(93,750)	(937,500)
Imported wheat cost, CIF Baghdad	250	250	250
Local wheat cost, FOB North	180	180	180
Total cost of wheat, dollars	749,250,000	784,687,500	725,625,000

Iraq consumes at present an estimate of 3.6 million tons of wheat per year, or about 2.7 million tons of flour, roughly equivalent to 9 kg per person per month. Demand for local wheat to make flour will depend on the blending percentage: it could range from 900,000 tons when the blend only has 25 percent local wheat to 3.6 million tons if flour is made of 100 percent local wheat. Low quality wheat is also distributed by the State Company for Animal Resources as a feed ingredient in poultry rations because at current domestic prices wheat may cost less than imported maize.

Grain Storage Facilities

A vast network of grain silos and other storage facilities owned by the Ministry of Trade and some of the state companies reflect decades of direct Government participation in the market for grains. About 42 such large structures are spread out across the country and in each Governorate. Each one of those grain storage silos support several flour mills that, paradoxically, are nearly all privately owned and operated. Over 150 mills are reportedly spread over the country, but highly concentrated around Baghdad and Mosul.

If the Government were to reduce purchases of wheat and instead purchase flour directly from mills, grain silos would remain empty while mills will have no place to store their grain purchases. It is necessary therefore to *find a mechanism to make storage capacity now in Government hands accessible to private millers.* The specific arrangements for this transition

should be worked out between the Ministry of Trade and the Ministry of Agriculture. Grain storage capacity in government silos exceeded grain delivered by farmers in the past few years.

Market Prices and Floor Prices

Access to open markets helps farmers to increase their income, even when subsidies on inputs are taken away. Wheat production was supported by the Government through the provision of subsidized inputs, of which fertilizer is the principal one. Farmers sold wheat to the Government at $105 /ton, and also received 180 kg of urea and DAP at $0.11/kg (half of the real cost) for gross revenue of $85.20 per ton after excluding fertilizer.

Iraqi wheat farmers now exposed to the international market should receive world market prices for comparable wheat. Borders are now de facto open for imports and exports of wheat even though CPA regulations call for import and export licenses at the moment. For 2004 Government announced a guarantee floor price of $180 per ton, but in the absence of subsidized urea farmers bought urea in the market at the commercial price of $0.22/kg, for a gross revenue less fertilizer of $140.40, a gain of $55.20 per ton or 65 percent higher income per ton. However, if the Ministry of Trade were to buy flour from millers instead of paying them to mill the wheat, farmers will be offered even higher prices by millers. Suppose mills were paid $300 per ton of flour. Millers could then buy imported wheat at $250/ton or local wheat. Millers will try to use as much local wheat as possible and will bid prices above the Government floor price. Farmers will get a higher price, say $220/ton, and gross revenue less fertilizer rises to $180.40 per ton, a gain of $95.20 or 112 percent increase in gross revenue.

Wheat farmers in Iraq will benefit from market prices, even after allowance for higher priced fertilizers.

Recommendations

The proposed changes in the wheat market and milling industry can only be done gradually over several years and each phase will require the consensus and cooperation of the Ministry of Trade, the Ministry of Agriculture, private sector millers and traders, and farmers. The main changes in Government regulations and procedures are:

- Expand the wheat seed treatment program to cover a larger area;
- Test newer varieties imported from international research centers for performance in Iraqi growing conditions;
- Confirm publicly the 2004 floor price of $180/mt of Grade 1 wheat, and discounts for lower grades;

- Assist farmers in producing wheat of higher grade quality;
- MOT sell imported wheat to millers at import cost;
- MOT purchase flour from millers for distribution under the PDS program;
- Grant millers access to public grain storage facilities;
- Maintain open borders for imports and exports of wheat and flour;
- Clarify criteria for export licenses for wheat and flour by MOT under the new CPA trade liberalization law; and
- Develop better estimates of wheat area planted, production and yields.

BARLEY

Barley in Iraq is nearly exclusively used for animal feed, either in the form of green forage, or in grain fed to sheep, goats, and poultry. A measure of the importance of the livestock sector in the farm economy is that such a large proportion of area planted in both winter and summer is for animal fodder: barley in winter and maize in summer. Both clover (bersim) and alfalfa reportedly also grow well in Iraq but these two crops do not appear to be significant at the moment in terms of area planted. Government supports barley mainly through the provision of fertilizer when it is available in excess of what is required for wheat, but in 2003 and 2004 when there was a shortage of fertilizers, barley farmers report not getting any. The recommended application for barley is 25 kg of urea and 30 kg of 18-18-0 NPK per donum. It is likely profitable for farmers to use fertilizer on barley at open market prices for fertilizer, barley, and livestock products.

Farmers normally select their own seed from this year's production for the next crop. There are no new domestic or foreign high-yielding varieties that the Ministry of Agriculture is promoting. Barley is less susceptible to smut, or at least it is not reported as a major problem. When used as green forage farmers either cut it by hand or let sheep graze in the fields. Multiple harvests are possible during the winter with proper irrigation and time for re-growths. The MOA is carrying out demonstration programs using alternative production and harvesting methods in many sites throughout the country, with the support of the ARDI project.

Grain silos in the Northern Governorates report significant quantities of barley in storage, indicating that Government buys barley from farmers, and in 2002 there was an announced purchase price of $65 per ton for barley. However, farmers in South-Central Iraq report no such purchases by public sector agencies in the recent past, and in 2004 there is no announced price for barley. The Animal Resources Company does not distribute barley to poultry farmers as feed ingredient for layer and broiler rations (though it does distribute wheat for poultry feed).

THE BROILER INDUSTRY AND CORN

Current Policy

Raising the nutritional quality of the dietary intake of the population has been a major concern of the Ministry of Agriculture, especially in the decade following the imposition of the trade embargo when per capita consumption of animal protein dropped dramatically. Even after the introduction of the Oil-for-food program, the standard food ration provided enough calories for health maintenance, but no animal protein except for 17 grams of powder milk per day. Priority was given to the poultry industry for the production of both eggs and chicken meat to supplement the basic diet with fresh animal proteins. The adopted strategy was to encourage the establishment of private sector producers with the Government providing all necessary inputs at heavily subsidized prices. In return, poultry producers sold their output of eggs and broilers at fixed prices back to the Government or at controlled prices to consumers.

Maize is a key ingredient in poultry feed ration. The MOA designated maize as a strategic crop to be given special treatment in the allocation of agricultural inputs during the summer season. The Government purchased maize from farmers and provided it to poultry producers at subsidized prices. Other inputs included hatching eggs, vaccines, protein meal, and equipment.

Thousands of egg and broiler producers were established throughout the country as part of the poultry program. In the aftermath of the 2003 the input supply and distribution network collapsed. Most broiler producers have stopped working but still many continue operating. Egg producers have been less affected and some have in fact prospered. In the short run the Ministry of Agriculture remains committed to supporting poultry producers at least during an adjustment period through the continued provision of subsidized inputs.

Current Situation

Through various external shocks including trade sanctions, the poultry industry—broiler and egg production - suffered dramatically in the late 1990s and was revived by the Government in 1998. Government provided hatching eggs, feeds, and vaccines to private hatcheries, broiler and layer facilities and paid a toll fee per finished bird raised or egg produced. The output was sold at fixed prices by the Government. Production was entirely in private hands and has remained so until now. The role of Government has changed significantly, however; now the Government has started a program to supply subsidized hatching eggs, feeds, and vaccines, but has no involvement in marketing chicken or eggs.

The State Company for Animal Resources (SCAR) has recently received imported hatching chicks, feeds (maize3, soybean meal, and protein concentrate) and vaccines and supply them at subsidized prices in 2004. The size of the subsidy varies but appears to be in the range of 25 percent to 35 percent for feeds. The Director of the SCAR claims that at planned import levels, the SCAR can provide inputs to about 50 percent of the currently active broiler producers in Iraq for the next six months. Though the number of active broiler farms can only be surmised, observations from the ARC Director and interviews with industry participants indicate the following two-tiered industry structure:

- 1,500 to 6,000 smaller farms of less than 10,000 birds per 50 day production cycle, (or about 2 typically sized houses.) About 10 percent to 20 percent are operating.

- 150 to 250 larger farms of 10,000 or more birds per cycle. About 40 percent to 60 percent are operating.

Other information provided by an ARDI fact-finding team in late 2003 indicated the following characteristics of the industry in the south:

- Basrah - about 108 broiler houses with capacity of 10,000 birds per cycle, and "several" houses between 10,000 and 20,000 birds per cycle.

- Maysan - total broiler capacity is 400,000 to 500,000 birds per cycle.

- Nassirya—97 private broiler farms with a total of about 300 houses, 68 of which are producing about 650,000 birds per cycle.

The large proportion of non-operational broiler houses indicates the difficult circumstances under which the industry is operating. However, the broiler sub-sector is surprisingly active considering, in particular, the high cost of feeds which are mainly imported, complemented by domestically produced corn through the Mesopotamia State Company for Seed Production. Feeds are the most significant cost component in broiler production, ranging typically from 60 percent to 70 percent of total costs of production. Low cost feeds in major broiler producing countries like the US and Brazil, combined with technologies which provide the best breeding stock, optimum feed conversion rates (2:1), minimum mortality losses (5 percent-7 percent), and efficient processing have turned these producers into large exporters of competitively priced frozen chicken.

Consumer demand characteristics and cold chain infrastructure contribute to the viability of the domestic broiler industry. Many consumers (perhaps as many as 50 percent) prefer to purchase live chickens for home slaughter. Concerns about animal disease (poultry feeds containing animal proteins infected by Mad Cow Disease which is thought to be transmittable to consumers of broiler meat) and rumors about the poor quality of imported frozen chicken (particularly thawed and refrozen chicken) have increased demand for live

[3] The Animal Resources Company manager says that domestically produced maize costs more than imports due to high costs at the Mesopotamia State Company for Seed Production.

bird home purchases. Live chicken imports are impractical and uneconomic. Imported frozen chicken requires a local cold chain which is not available in many rural areas. Thus some, if not many, areas are somewhat insulated from low cost frozen chicken imports.

The larger more efficient Iraqi broiler farms are achieving efficient feed conversion rates of 2:1, or close to that ratio, and have relatively low mortality rates. Though these broiler producers are relying on virtually all imported and unsubsidized inputs purchased on the open market, it is not surprising that they are competitive under current conditions. However, many smaller and far less efficient broiler farmers also appear to be competitive at current live-weight broiler prices. Many of these farms suffer from feed conversion ratios of 3:1 and higher, and mortality rates of 20 percent to 25 percent. Low cost construction and low labor costs obviously compensate for some of the higher feed costs and mortality losses. In spite of these inefficiencies a substantial number of these smaller producers appear to be covering their costs and making a profit.

But these small producers are vulnerable to several market variables, such as live-weight market price volatility, which is likely to be high as the industry develops, and variable quality of hatching eggs and feeds. For the vast majority that have weak financial positions, one poor production cycle, a temporary downswing in chicken prices, a bad batch of feed, and they will go out of business.

Corn Production

For Iraq to establish a competitive broiler industry, it has to produce greater volumes of corn at unsubsidized prices that are competitive compared to imports. The Mesopotamia Seed Production Company (Mesopotamia) is the state company responsible for corn production for use in poultry feeds through 29 collection stations, processing plants and other facilities. Mesopotamia provides seed to farmers, provides production advice and then buys field corn from farmers at a subsidized price and sells processed feed corn to poultry producers at a subsidized price.

The almost exclusive role for Mesopotamia has been to provide poultry producers with a low cost source of corn to support low consumer prices for chicken. Mesopotamia paid farmers 130,000 ID per ton of corn on the cob, and sells grain to poultry farmers for 230,000 ID per ton. Both prices are set by the Ministry of Agriculture, but Mesopotamia claims that its true cost per ton of grain is 300,000 ID. The subsidy for poultry producers is therefore in the range of 70,000 ID/ton—or the difference between the full costs of corn production and processing and the sales price to the poultry producers.

Even at full planned production Mesopotamia is able to provide only a small portion of the corn feeds needed by poultry producers. Mesopotamia planned to produce 46,800 tons of processed corn for poultry feed in 2004, but *Mesopotamia lacks a budget to produce and process corn*. Several broiler producers have reported that they are unable to buy corn feed from Mesopotamia. The planned 46,800 tons for 2004 crop would cover annual corn feed requirements for between 70 to 100 average sized broiler houses of 10,000 bird capacity per

cycle4. Mesopotamia's largest competitors are the Ministry of Agriculture's own State Companies for Agricultural Supplies and Animal Resources which are selling feed corn at ID 180,000 per ton (Mesopotamia's price is 230,000 ID) to poultry farmers.

Transition Options

It is possible that the presence of subsidized hatching eggs, feeds, and vaccines offered by the SCAR may actually contribute to the demise of small broiler farms that are not able to access the subsidized inputs. The production price advantage due to the subsidies coupled with the potential decrease in chicken price as output increases will put these farmers at a disadvantage. But this is expected to be only a temporary concern, as these subsidized inputs will not likely be available in subsequent years. And this position is consistent with the medium-term objectives of the SCAR.

The alternatives to subsidizing the broiler industry will be to constrain low cost imports through tariffs or counter-veiling duties to compensate for subsidies in exporting countries, or allowing imports to capture the market for frozen chicken. Some of the countries exporting frozen chickens to Iraq have subsidy programs on feed supplies and on poultry production. Those subsidies put Iraqi producers at a competitive disadvantage. Countervailing duties on subsidized exports are justifiable safeguard measures, but they need to be documented specifically against the target country.

Rather than supply subsidized inputs, the SCAR Director envisions the company providing useful services for the industry, both regulatory services paid for by the GOI and fee paid services for individual companies. Regulatory services are needed to police the import of feeds and other inputs. In the current free and open trading environment there are few checks on the actions of unscrupulous traders who import and sell poor quality inputs.

Subsidizing imported protein meals such as soybean are more problematic and certainly more complex. Analyses are required to determine the costs of growing and processing soy beans and soybean oil or importing and domestically processing soybeans compared to importing soybean meal and oil.

Most of the maize planted by farmers comes from open pollinated varieties, which means that farmers can continue using kernels from the crop as seed for next season, without a significant loss of yield. Some hybrid varieties were introduced in the 1990's but they occupied a small portion of the area. The pure lines used for generating these hybrids were lost in the aftermath of the 2003 conflict, and any maize breeding program will have to start from scratch. The State Board for Seed Testing and Certification would like to start as soon as possible maize genetic improvement program using imported pure lines and testing foreign varieties for their suitability to Iraqi conditions.

[4] Based on total feed requirements of 8,000 kg for 100,000 birds per 50 day growth cycle, with corn comprising 50% of the feed ration. Annual production in 5 cycles per year.

International seed companies have no interest in open pollinated varieties because farmers can reuse seed for several years. Hybrid varieties are clearly the way of the future in the long run, and international seed companies have already many potential varieties ready to be tried. Commercial distribution of a new variety, however, normally requires testing for two seasons, but under current dire conditions this process can be accelerated. The laboratory at the State Board for Seed Testing and Certification can test a sample for germination and pests in 10 days, for presence for bacterial diseases in 4-7 days, and for viral diseases in 48 hours. The field trials are to determine whether the variety performs well under Iraqi growing conditions.

We suggest that the Ministry coordinates a program for the testing of commercially available maize hybrid varieties with promise in Iraq, under the oversight of the Seed Testing and Certification Board. Funding for testing of hybrid seeds under farm conditions and in experimental stations could come from either commercial seed companies or donor organizations. The Agriculture Reconstruction and Development Program for Iraq (ARDI) project might contribute its technical expertise to design and carry out the appropriate test methodology.

Floor Price

Corn production, given its importance as a feed input for broiler production, needs to be supported by the Government, but not necessarily through a state production and processing company like Mesopotamia. If farmers are reluctant to grow corn because of the uncertainty of a market, Government should establish a floor price for corn. A guaranteed minimum price should induce farmers to plant a larger acreage. However, if the price is set too high, plantings and production will be higher and private buyers will be crowded out by the guaranteed price. If the price guarantee is too low, there will be little production, and private buyers will offer higher prices than the Government. Ideally, the price should be comparable to the international equivalent price of imported corn, so that private buyers, mainly poultry producers, will purchase local corn instead of imports.

The current price of imported maize can be estimated from the late March, 2004 spot Gulf price of $132/ton. Adding ocean transport and inland transport cost of $50/ton, results in a US corn delivered price of about $182/ton at the port in Basra. The December 2004 futures contract at the Chicago Board of Trade is $122/ton which yields a Basrah port price of $180. The Ministry could offer a price of $100 per ton to encourage farmers to produce corn in Iraq during the summer, on the expectation that at harvest time in September and October, poultry farmers will find it profitable to purchase local corn at prices below imported American corn, and therefore the Government will not be required to purchase any corn to support the floor price.

If the Government wants to hedge its offer of a floor price for corn, so as to limit its potential financial loss were the market price to fall much below current expectations, it could purchase a policy of an option to sell cost at the same price as the set floor price. That way, if

the market price falls below the floor price the Government can collect from the CBOT the difference in price, and with that it could honor the floor price to Iraqi corn growers.

A price insurance policy to guarantee a floor price of $100/ton on December 2004 can be purchased for $2.20 a ton, or $220,000 for 100,000 tons. For a floor price of $96, the cost is only $140,000; for $92/ton it is $100,000 and for $88/ton it is merely $65,000.

Recommendations

- Remove input subsidies in the broiler industry after the current budget for SCAR purchases of hatching eggs, feed, and vaccines has been exhausted; removal of the subsidies will result in the demise of a substantial number of private producers--the most efficient will remain;

- Examine claims that imported frozen chicken is subsidized by some countries, and whether countervailing duties are justified against imports from those countries;

- Support corn production by announcing a floor price to encourage farmers to plant corn in the summer of 2004, and make provisions for the Mesopotamia Seed Company to purchase corn in the event that world prices fall below the floor price; and

- Test the production performance in Iraq's growing conditions of commercial hybrid varieties imported from reputable international seed companies, and encourage the commercial distribution of successful varieties.

COTTON

Official Policy

Cotton is the only non-food product designated as a "strategic crop" by the Government of Iraq. This designation was in part motivated by the need to provide raw materials to the small textile industry during the sanctions, but also because cotton production in Iraq has good potential competitiveness in the international market as described below. As a strategic crop, cotton farmers can receive preferential access to subsidized agricultural inputs. The Ministry of Agriculture assigned responsibility for promotion of cotton production to the State Company for Industrial Crops. SCIC provided farmers planting seed and technical supervision throughout the growing cycle and coordinated with other agencies access to subsidized inputs. At harvest time, SCIC purchased seed cotton at fixed prices and distributed it for processing among the public and private ginning mills.

The long run competitiveness of cotton production in Iraq seems a priori very positive: growing desert conditions with abundant water for irrigation are favorable for cotton because it reduces the high costs of pesticides and pest management. Neighboring countries such as

Syria, Turkey, and Pakistan have thriving cotton and textile industries that provide a ready market. Iraq does not have a sizeable textile industry that is likely to demand protection from foreign competition through restrictions on exports or imposition of artificially low prices on domestic lint. Alternative summer crops such as sunflower and maize are likely less competitive than cotton. High labor requirements, especially at harvest time, can raise questions about the labor costs once Iraqi wages recover from their current low levels, but the possible introduction of combines for mechanical harvest could address that problem. At present harvest is done entirely by hand and thus generate badly needed employment opportunities in rural areas.

Current Situation

In the aftermath of the war in the spring of 2003 the two ginning mills owned by the Ministry of Industry in Baghdad and in Kut were destroyed or looted and are now closed. Government could not buy cotton from farmers in the fall of 2003 because its factories were closed, it had no funds to pay farmers, and had large stocks of sub-grade lint on hand. Most of the cotton production is concentrated between Tikrit and Kirkuk, but production extends south of Baghdad including Wassit and Babil Governorates. Only about 45,000 hectares were planted to cotton in 2003 and the estimated yield is about 2.4 t/ha of raw cotton, or about 800 kg/ha of lint. At the end of the season private traders and buyers came and purchased seed cotton at bargain prices and exported to Syria and Turkey.

Prospects for planting in 2004 are very uncertain because the Government has announced no plans to purchase cotton this year. There is sufficient seed available which is taken from the production of certain farmers by the Mesopotamia Seed Company, but the seed is not treated in any way before being sold back to farmers. The current shortage of fertilizers and pesticides in the country also raises question about the willingness of farmers to plant cotton this season. The Ministry of Agriculture estimates 2004 planting of only about 12,500 hectares.

Transition Options

New Varieties

Introducing foreign varieties from neighboring countries could improve yields and the competitiveness of cotton, but at present foreign varieties cannot be used unless they have been registered by the Ministry of Agriculture. Some Syrian and Turkish varieties have been tested but not yet registered. Genetically modified varieties (Bt cotton) are now widely used in many countries (South Africa, India, USA, Argentina and Brazil) with very positive results. The MOA has not considered yet whether to allow introduction of genetically modified varieties in Iraq. We are not recommending introduction of GM varieties, only raising the issue for future Ministerial consideration. Farm testing of foreign varieties under controlled conditions could begin in the following seasons to demonstrate their potential

promise and shortcomings. Since cotton seed is used for the extraction of edible oil, public health authorities need to be involved to ensure that oil from GM varieties is completely safe. (Note however, that at this time food shops in Iraq have plenty of imported food products from the US and other parts of the world where genetically modified products have been present in the food chain for several years without apparently any harmful consequences.)

Floor Price for Cotton in 2004

There are seven private ginning mills in Iraq, including three of mid-size capacity and four smaller ones. These gins were partly responsible for rescuing the cotton crop in 2003. This year however, they fear that last's years trauma and current difficulties will inhibit farmers from planting cotton this spring. In the absence of Government announcement of a floor price, farmers may not take the risk of planting cotton.

The Ministry of Agriculture can announced a guarantee price for cotton, similar to the one suggested for maize, but in the case of cotton expected prices in Iraq are roughly comparable to those prevailing in the USA because both sources are feeding the market in Europe. In that case the cotton futures market in New York gives a close approximation of what prices in Iraq will be at the same time. The futures price in the USA serves as a good proxy for the expected price in Iraq. A futures price of 60 cents/lb in the futures market will mean that in Iraq we could expect a 60 c/lb of lint. The New York futures price for December 2004 is about 68 cents. The guarantee price for cotton in Iraq can then set between 7 and 14 cents less, or between 54 and 61 c/lb. The lower the guarantee price the less likely that the Government makes deficiency payments, but also the less incentive for farmers to grow cotton. A balance between these two contenting forces can be reached halfway at, say, a guarantee price of 57 c/lb. Buying options to sell at 57 c/lb at the same time in the New York cotton exchange will limit the government's financial exposure from the price guarantee to the cost of the option. Technical assistance from ARDI could assist the MOA in setting up a floor price mechanism of this nature.

Potential Export Restrictions

For a floor or guarantee price insurance to work well for cotton it is necessary to ginners and traders to be reasonably certain that the Government of Iraq will not impose restrictions on exports of cotton in the coming season. Since the price insurance is tied with the world price of cotton traders need to be able to sell in that market to recover their premium and investments. At present a state-owned spinning mill is not operating, but if it were revived it should be able to offer international prices for cotton lint, without recourse to export restrictions in order to force the price of cotton lint down. The Ministry of Agriculture needs to consult with the Ministries of Trade and Industry about the importance of avoiding potential export restrictions on cotton.

Recommendations

- The Ministry of Agriculture announce a floor price for cotton in 2004 to encourage farmers to grow cotton, and make adequate provisions to compensate farmers if the market price is below the floor price;

- The Government assure farmers and ginning mills that there won't be any restrictions on exports of cotton lint or cotton seed; and

- Arrange for testing of imported cotton varieties with promising potential under Iraqi growing conditions.

RICE

Official Policy

Rice is not always mentioned among the strategic crops listed by officials from the Government. This reflects the separation of responsibilities between two ministries: the Ministry of Trade is responsible for importing rice to distribute as part of the food ration; MOT distributes imported rice from Thailand and Vietnam. The Ministry of Agriculture is charged with promoting rice production. The type of specialty rice produced in Iraq is far too expensive to be distributed in the basic food ration. The domestic aromatic Anbar variety of rice is highly regarded by consumers and has good export potential in neighboring countries in the Middle East in competition with Basmati and aromatic rice from Pakistan. There is no specific policy to promote the production of regular rice in Iraq to substitute for imported rice.

The irrigated fields of Mesopotamia seem ideally suited for rice production because of their heavy soils, access to irrigation water, and hot summer temperatures. It is somewhat surprising that rice production in Iraq occupies only a small area during summer months. It is not clear what factors are most important to account for the low area planted to rice. Access to the local market is precluded by the presence of free rice from the PDS. But there may be agronomic factors as well. According to irrigation officials summer water supplies are limited and rice consumes much more water than other crops, so it is necessary to limit the area dedicated to rice. Soils salinity in irrigated lands is also cited as a reason for not growing rice in some areas. A combination of these economic and agronomic factors would have to be addressed for the potential of rice production and exports become a reality.

Current Situation

Most of the area planted to rice is for the production of the expensive aromatic Anbar variety, but very little area is used for the production of the type of rice used in the food basket. Some areas are more suitable for rice than maize, such as Najaf, Diwanya, Muthana, Missan, and

Diyala. Depending on the area, unfavorable agronomic conditions for rice cultivation are often cited, the main problems cited being water-logging and salinity either in the soils or in the water.

Oil-for-Food Free Rice

The main obstacles to the expansion of rice production is the PDS program, which distributes free of charge a monthly ration of 3 kilograms of imported rice to every man, woman, and child, including rural families. The food ration program does not buy any local rice to distribute as part of the food basket. Vietnam and Thailand are the main sources of the rice bought by the World Food Program for the PDS. Food shops and markets in Baghdad, also sell rice from Pakistan and Thailand at commercial prices, along with the aromatic Anbar local rice. Early in March 2004 recycled imported PDS rice from Thailand and Vietnam could be purchased in the open market for 250 dinars/kg, while Iraqi Anbar rice cost 600-700 dinars/kg. Basmati rice from India and aromatic rice from Pakistan were also found at about 1,000 dinars/kg.

In the years prior to the Oil-for-Food program, when Iraq was subject to the United Nations trade embargo, the production of rice expanded rapidly to provide for the needs of the population. However, once the Oil-for-Food program came into play, rice planted area shrank to a fraction and today it is estimated at less than 50,000 hectares. About 25,000 hectares are estimated in Anbar producing yields of about 2 tons/ha. All rice is produced under irrigation. Some of the Anbar will be exported to neighboring countries. Government purchases of rice are erratic. In 2002 Government provided low cost fertilizer and herbicides to rice farmers and offered to purchase non aromatic rice at 150-200,000 dinars/ton, but many farmers sold in local markets at better prices. There have been years when Government did not buy any rice at all and farmers are therefore hesitant to commit resources to plant large areas. Expectations for 2004 are that Government will not purchase local rice; no buying price has been announced.

Transition Options

There are high yielding varieties can produce 4 tons of paddy per hectare and more at research stations but the price offered by Government in the past was not sufficiently attractive. The quality of local rice is also a source of complaints. The mills used by the Ministry of Trade to mill local rice are said not to do a good job and produce poor quality with a lot of brokens.

There is considerable uncertainty about what will be the policy of the Ministry of Agriculture regarding rice cultivation. Exports of Anbar rice offer some prospects but farmers need help in raising yields and improving quality and packaging. There is a good market in neighboring countries. Farmers can make more profit from rice than maize in most irrigated areas, but maize has a more stable market. When water supply is not reliable rice is more risky because it requires more water. Rice also needs expensive herbicides when broadcast and not

transplanted. Fertilizer for rice cannot be reliably obtained from the Agricultural Supplies Company; farmers have then to purchase urea in the open market at nearly three times the cost from Government.

How much of the problem for farmers expanding rice cultivation is market-related or agronomic is hard to elucidate at this stage. The continuing viability of Anbar rice production gives hope that the agronomic obstacles can be solved with proper production techniques and choice of varieties. Market-related roadblocks are harder to solve because these are linked to the free distribution of imported rice to the entire population by Ministry of Trade.

The new CPA trade liberalization law enacted in February 2004 makes it illegal to export rice unless the Ministry of Trade issues a license authorizing the export. The restriction is limited to imported rice, but it is not clear how MOT will distinguish between locally produced rice from imported rice.

Recommendations

- Remove or reduce rice from the PDS food basket and monetize the value of the rice allowance in order to allow families to purchase rice in the open market;
- Test local and foreign rice varieties for performance in various regions of Iraq to determine the competitiveness of the crop under varying growing conditions; and
- Make clear what criteria the MOT will use to issue export licenses for locally produced rice.

SUNFLOWER

Official Policy

The State Company for Industrial Crops specializes in promoting several oilseeds, the principal ones being sunflower and cotton, but also include at a smaller scale sesame, peanuts, soybeans, and canola.

Current Situation

Seed is sold to farmers through the Ministry of Agriculture's Agricultural Supplies Company at highly discounted prices: 4,000 dinars/kg of imported hybrid and 3,000 dinars for Iraqi hybrid. Farmers need 2 kg of seed per donum. The principal Governorates for production of sunflower are Wassit and Tameem, but small areas are also planted in Babil, Tikrit, Anbar, and Diyala. Seed is produced in private farms in the Mosul area, under close supervision of the SCIC; testing is done at an experimental farm some 100 km from Baghdad.

The SCIC orchestrates the entire effort to produce sunflower, from contracting the farmers who will receive seed, arranging for input supplies from the Agricultural Supplies Company, and provision of technical supervision during the growing cycle. SCIC also buys the sunflower crop directly from farmers at reception centers located near the selected production areas. The price was set by Government at 350,000 dinars per ton, but adjustments were made for moisture content and presence of dirt and foreign matter. The largest production was reached in 1995 with 42,000 tons, but had declined to only 17,000 tons in 2002. In 2003 production was only 600 tons. SCIC cleans and classifies the crop received from farmers and delivers it to the Vegetable Oil Company for oil production. The factory has virtually stopped operations, and it is not certain whether it will be restarted in 2004 when the sunflower crop comes out.

Only 75 employees out of the 500 or so employees at SCIC are occupied on the sunflower program, and 50 of the 75 work at the collection centers cleaning and processing the seeds. Oil content of the seed is high, ranging between 40 and 45 percent of weight, but actual extraction only reaches 350 kg from one ton of sunflower seed. The cost of the raw material, sunflower seed, therefore comes to 1,000 dinars per kilogram. The byproduct cake is used for animal feed, mainly for ruminants because it has too much fiber for chickens. The market for cooking oil in Iraq has been flooded with oils from many sources, including Turkey, Egypt, Tunisia, Jordan, and Syria. A 2-liter bottle of cooking oil imported from Turkey can be purchased for 3,200 dinars (1,600 dinars/kg) and a 15 kg can from Egypt was priced at 9,000 dinars (600 dinars/kg). It should be recalled that cooking oil (liquid or hydrogenated) is included in the food basket distributed free of charge under the PDS program, at the rate of 1.250 kg per person per month, or 5 kg for a family of four.

Transition Options

The situation in 2004 is very uncertain. SCIC only has 176 tons of seed at hand, including 26 tons of local hybrid seed and the rest from imported stocks. That is enough to plant 88,000 donums or 22,000 hectares, out of which they could expect a production of 17,000 tons of sunflower. However, this year there is no official distribution of fertilizers and farmers will therefore hesitate to plant. As of March 2004, no purchase price to farmers was been announced by Government for the 2004 crop. Farmers could sell to private buyers but there are no other known buyers of sunflower at the moment.

Sunflower breeders at the SCIC have developed a local hybrid variety that compares favorably in terms of yield and oil content with imported hybrid varieties from France and Turkey. Before 2003 SCIC was importing 350 to 500 tons of hybrid seed from France and Turkey, under the Oil-for-Food program at a price of $7,200 per ton. The cost of Iraqi hybrid seed is estimated at only $2,000 per ton. In 2004 SCIC does not have any imported seed, but still has 26.4 tons of local hybrid seed that could be used for commercial production.

Without a more thorough analysis of possible improvements in the productivity of sunflower production and oil extraction, it is not possible to determine at this stage whether it is

internationally competitive to produce sunflower in Iraq, i.e., whether farmers can get a profitable price selling to a commercial oil processor operating in a competitive market.

Recommendations

- Distribute more widely among farmers seed of the new hybrid variety developed by SCIC to determine whether it performs as well in farmers' fields as in experimental tests;

- Reassure farmers that the Vegetable Oil Company will purchase their crop at a low floor price or that they can export their production to neighboring countries; and

- Campaign for the PDS program to make some purchases of cooking oil locally for distribution as part of the food ration.

AGRICULTURAL INDUSTRIES

THE FLOUR MILLING INDUSTRY

Official Policy

Economic activity generated by the wheat and flour sub-sector make it among the largest, if not the largest, sub-sector in agriculture. It remains the most heavily government controlled sub-sector in agriculture. Government involvement includes the following:

- Provision of production inputs to wheat and barley farmers;
- Establishment of fixed prices for different wheat grades, and purchasing all wheat that farmers wish to sell, though farmers are not forced to sell their wheat to the government;[5]
- Ownership and operating control of all grain silos, and ownership of the wheat in these silos;
- Control and distribution of wheat from silos to wheat mills, and ownership and distribution of flour from mills to public food distribution centers for PDS flour;
- Ownership of three public sector flour mills that mill imported wheat for domestic commercial customers, excluding the PDS;
- Contract arrangements with the 157 domestic private mills for toll milling of MOT wheat into flour for the PDS; and
- Subsidization of 9kg. of flour per capita per month through the PDS.

The objective of this annex is to promote an open market in flour milling, apart from monetizing the flour ration portion of the PDS which is discussed in another section of this report. Though privatization of MOT grain silos and MOT flour mills is not being considered as a short-term component of the liberalization process, serious discussion of the role of MOT in flour milling is a critical element of this discussion, as it threatens this liberalization plan.

Current Conditions

Private flour millers now operate under on a toll milling basis. The MOT delivers to the mills a cleaned and blended mix of imported and local wheat. The millers mill the flour which is

[5] In 2002-2003, MOT purchased barley at a set price of $65 per ton. For the 2003-2004 season, MOT will not purchase barley from farmers.

then distributed by the MOT to PDS distribution centers. For this service millers are provided a milling fee of $10/ton and are allowed to sell the millfeed fraction (milled wheat yields about 17 percent millfeed, 80 percent flour, with 3 percent loss) for animal feed. At a current price of $40/ton for millfeed, revenues from animal feed sales runs about $7/ton yielding total milling revenue of $17/ton. Several millers have reported milling costs of about ID 20,000/ton, or about $13/ton. The result is positive net revenues of about $4/ton. Under these circumstances it is not surprising that flour millers are reluctant to change the system. They are provided a positive return with no market risk associated with wheat purchases, and flour selling. They face only the operational risk of maintaining their facilities to mill flour that meets the specifications required for the PDS food basket.

At present the MOT promotes a mix of 60 percent imported and 40 percent local wheat. It is important to recognize that the quality of local wheat varies substantially by producing area. And imported wheat quality varies as well. Therefore the 60/40 mix becomes little more than a guide, while the actual proportions vary substantially. Several millers in the Amara area, which typically produces lower quality wheat compared to the north, have reported that they can use up to 50 percent local wheat in the milling mix if they have access to high quality local wheat. Other mills require differing mixes of local and imported wheat.

Transition Options

A Three-Step Plan

The plan for liberalizing the flour market is essentially a three step process which will not interfere with government purchases of flour for the PDS food basket. If a future decision is made to end the PDS, this plan allows for private mills to shift into operating in a completely commercial market environment, i.e., to purchase wheat and sell flour, where the role of the government is only to regulate the industry.

The three steps to the plan are as follows:

- A moratorium on additional public sector milling capacity in direct competition with current private sector milling capacity;

- MOT eliminates the practice of toll milling for private millers, and introduces a program to purchase flour directly from private millers--Millers can purchase local wheat from farmers, from MOT silos, or imported wheat; and

- MOT maintains a price support program for milling quality wheat and becomes only the buyer of last resort.

Public Sector Mills

A complicating factor in the liberalization scheme is the current and prospective role of the government in mill ownership and operations. At present the government owns and operates 3 mills—2 in Baghdad each with 600 tons/day milling capacity and 1 mill in Amara with 200 tons/day capacity. These are the most modern mills in Iraq which mill only high quality imported wheat and produce flour that is of higher quality than that required by the PDS. This higher quality flour is sold to bakeries, direct to consumers, and other commercial buyers, and competes with a price advantage with imported high quality flour. Three public mills do not pose a problem to liberalizing the PDS flour component of the sub-sector. The public mills can operate on a parallel path to private millers producing flour for the PDS. And eventually a privatization scheme can place these public mills in private hands.

However, the MOT is planning on expanding its milling position. Four new public mills are expected by the end of 2004 and the MOT claims to have the necessary new equipment on hand and pre-construction work or more done for an additional 16 mills, to bring the total number of public mills to 23[6], perhaps as early as year end 2005. These mills will add substantially to milling capacity and threaten the existence of older and smaller private mills. For example, if the average capacity of the new MOT mills will be 400 tons per day (compared to the two Baghdad mills at 600 tons per day), they will produce about 240,000 tons of flour per month[7]. Though the public mills do not now produce flour for the PDS, their combined output would equal the current PDS flour demand. Even at half this capacity - say 200 tons per day - these public mills will still produce nearly one-half of the current PDS demand. These new mills will be far more efficient than older and smaller private mills and if permitted to compete for PDS flour would capture PDS market share from private mills. As private milling capacity is estimated to be about double the current PDS flour demand, most private millers would be forced out of the market, and the MOT mills would be the dominating force in the sub-sector.

> **We recommend a moratorium on MOT mill construction until a plan for privatizing or other means of transferring control of public mills to the private sector can be made.** Otherwise, this development plan for wheat and flour liberalization will be compromised.

Buying Flour from Millers

The critical first step in the process of reducing government control of flour milling is for the government to determine a minimum purchase price for flour from private mills that will be used in the PDS system. Initially, perhaps during the first transition year, the flour price could be established to provide a return slightly higher than millers now achieve to encourage continued milling operations. The flour price should be based on the relative prices of local

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[6] The Director General for Grain Processing has reported that his directorate needs only $10 million to bring all 20 new flour mills into full operations.

[7] Monthly production based on a 25 day operating month or 300 days per year.

and imported wheat, internal transportation costs, silo charges for cleaning, blending, and storage, and finally a milling margin.

Granting Millers Access to Grain storage

Private millers will acquire local and imported grain but lack sufficient blending, storage and other capacity to circumvent MOT grain silos. Until the MOT privatizes the silos through outright sales or lease arrangements, the government must remain involved in this segment of the sub-sector. Virtually all private millers are structured to receive wheat directly from the farmer but only in the very short-term. Most mills have enough wheat storage to cover only several days of milling operations. Overtime millers will adapt by gaining access to grain storage capacity, but in the short run, the mills must rely on grain silos to store large volumes following harvest. This means that instead of purchasing wheat from the silos, millers will have to purchase local wheat from farmers, and then pay a service fee to the MOT silos for receiving, cleaning, elevating, blending, and storing the wheat until the miller needs the wheat. MOT will need to determine a charge to cover these costs.

Sourcing of Imported Wheat

Millers will need some assistance in sourcing imported wheat as they have no experience in purchasing imports, and individual millers will not be able to purchase ship-load volumes as their milling requirements are far less. If grain sourcing becomes truly open, international grain merchants will quickly enter the market, as have private farm equipment, seed, feed, pesticide, and other farm input suppliers. These merchants will contract for larger volumes, store in their own facilities or in MOT silos for a fee and then sell smaller quantities to millers as needed. However, it would be advisable to assist millers at the outset to source imported wheat. USDA and AUSAID should establish an easily accessible system by which US and Australian wheat can be purchased by the millers. This support should be temporary until a competitive import network is established.

Market Competition Among Millers

The liberalization program for private flour millers will result in an adjustment process. Investment requirements, pricing pressure, and other competitive factors will allow the most efficient millers to increasingly pressure lesser efficient millers, and the latter will exit the industry. The amount of excess capacity among private millers suggests that this adjustment process will begin quickly. However, the adjustment will be slow as long as the flour procurement price is set at a level to encourage milling companies to produce flour. As the MOT becomes accustomed to the system and is assured of procuring sufficient PDS flour, MOT can lower the flour price which will trigger greater competitive response from the millers. The 157 private milling companies possess capacity to produce about 500,000 tons of flour per month. Current PDS flour needs are about 250,000 tons per month. That all millers are operating at an aggregate rate of 50 percent of capacity is made possible only by

the artificial constraints imposed by MOT. Because high operating rates are critical for economic operations, efficient millers will bid up local wheat prices to keep their mills running, and will squeeze out marginal operators.

Millers Purchase Domestic Wheat—Government Is Buyer of Last Resort

Were millers to purchase wheat from farmers either directly or through MOT grain silos, the government can have a support price, consistent with the 2004-05 season price of $180 per ton for Grade 1 wheat, and become a buyer of last resort. Flour millers would rapidly establish a market for Grade 1 wheat at a price higher than the support price. In as much as Grade 1 wheat can be milled without imported wheat to produce acceptable quality PDS flour[8] the price for Grade 1 wheat will approach the international price, which is estimated at about $250 per ton CIF Baghdad. The prices that private millers will offer for Grades 2 and 3 (to the extent they can be cleaned to yield milling quality wheat) will be based on the proportion of imported wheat required to increase the quality of the wheat for milling. Every kg of local wheat that can be used in the milling mix means lower total wheat costs and the opportunity for millers to bid up the price of higher quality local wheat.

Open market purchasing by private millers will lead to pricing that will encourage, at first, the best farmers that have the know-how and the financial capacity to purchase high quality seeds, fertilizer, and pesticides to improve the quality of wheat production. Marginal farmers will be slower to adapt given financial and technical constraints. This latter group will probably continue to use lower quality farmer-saved seed, less than optimum amounts of fertilizer and pesticides, and produce low quality wheat that will require greater proportions of imported wheat. These farmers will require the support of an improved extension service as well as improved inputs.

Promoting Better Quality Wheat

MOA officials have reported that their wheat breeding program has developed suitable self pollinated wheat varieties for different growing conditions. This claim appears to be supported by assertions from MOT officials that 100 percent Grade 1 wheat produces suitable flour for the PDS. In the absence of accurate data, industry spokesmen report that Grade 1 wheat comprises less than 10 percent of total wheat produced. We recommend that breeding efforts be accelerated to develop new high yielding high gluten varieties.

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[8] PDS flour specifications are: 26%-28% gluten, 14% moisture, 0.9%-1% ash, and 250-300 for falling number (a measure of flour enzyme activity). The high gluten content is desirable in bread making to provide a "sticky" surface to the bread dough so it will adhere to the walls of bread ovens.

Recommendations

- Announce a moratorium on public flour mill construction;
- Announce that Government will open the wheat and flour market by purchasing flour from millers;
- Establish a purchase price for flour that will be used in the PDS system. However, millers are free to sell flour to any buyer;
- Millers purchase local wheat either directly from farmers or from MOT grain silos, Millers are free to bid above the floor price for higher quality local wheat;
- Sourcing of imported wheat will be supported by USDA and AUSAID in the interim period before international grain merchandisers become established;
- Confirm the floor price for wheat, with Government as the buyer of last resort if the market price falls below the support price; and
- Promote of better quality wheat through better production practices and variety selection.

ANNEX 2

RESTRUCTURING THE PDS

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RESTRUCTURING THE PDS

PROBLEM

The PDS (Public Distribution System) delivers a food basket to every Iraqi at virtually zero cost. It performed well in ensuring adequate nutrition under international sanctions, but it now has become a major obstacle to the recovery of the agricultural sector and the introduction of a market-based economy for food and agriculture. In particular, the free distribution of wheat flour and other items in the food basket:

- Prevents development of a market for wheat and other cereals;
- Puts government at the center of a command-and-control economy for food and agriculture;
- Severely distorts prices for consumers and farmers;
- Prevents the entry of private sector operators in food marketing;
- Distorts consumers' food consumption patterns and farmers' production decisions;
- Gives a few administrative officials responsibility for decisions normally made by markets reflecting producers' and consumers' expressed preferences;
- Imposes enormous financial burdens on the government's budget, up to $3 billion annually; and
- Requires the government to impose restriction on exports of all products similar to those in the food basket.

The challenge for the new Iraqi government is to devise a transitional strategy to move from universal free food distribution to a food market economy with competitively determined prices, while ensuring food security to groups at nutritional risk.

BACKGROUND

The current PDS is a legacy from the United Nations Oil-for-Food (OFF) program set up in 1996, when Iraq was under strict international trade sanctions. The OFF program allowed Iraq to import foods, medicines, and basic necessities in exchange for oil exports; it relieved the pressure on the farm sector to produce all the food needed to feed the country, and changed its role to supplementing the import-based diet with fruits, vegetables, and livestock products.

The PDS ration provides free to all residents—urban and rural—a nutritionally balanced diet of dry goods that fulfills recommended minimum energy and protein intake:

Ration Item	Ration Allowance (grams per month)	Calories per 100 g	Calories per Day
Wheat flour	9,000	361	1,083
Rice	3,000	391	391
Sugar	2,500	387	323
Cooking oil	1,250	884	368
Pulses	1,000	350	117
Powder milk	500	496	83
Tea	150	0	0
		Total caloric intake:	2,365 per day

Impact of PDS on Iraq's Agriculture

For Iraqi farmers, the introduction of the OFF ration program was a mixed blessing because it gave rural families a reliable source of food for their own families but deprived farmers of the market for their products among urban consumers. All the ingredients of the food basket are imported, except for roughly one quarter of the wheat used to make flour. In the past, the main farm products were sold to the government at fixed prices, but some products—fruits, vegetables, and livestock products such as beef and mutton—were left out of state control. Poultry products had strict retail price controls, however. Demand for non-controlled products was limited by the contraction of consumers' income and effective demand during the 1990s.

Wheat flour is by far the main item in the PDS food basket. The Ministry of Trade (MOT) is now taking over from the World Food Program responsibility for international procurement of imported foods. The MOT will also buy domestic wheat from farmers at an announced price of $180 per ton of first grade wheat and $130 for fourth grade. These prices are slightly below the comparable cost of wheat from international sources delivered to millers in Baghdad, which is estimated at roughly $250 per ton. Domestic wheat is of poor quality (more than 50 percent of it grade 4) and must be blended with imported wheat. Private milling companies (more than 150 of them) process wheat into flour which PDS distributes through a network of 44,000 neighborhood distribution centers.

Every household has a Food Ration Card, with coupons, that identifies the family, number of adults and children, address, district and zone, and the food distribution centers where they can pick up flour and other items in the food basket. The card has become in effect a family identification card required for all official business transactions.

The new Trade Liberalization Policy issued by the Coalition Provisional Authority (CPA) on February 26, 2004 (Order Number 54) suspends all customs tariffs, duties, import taxes, and similar surcharges on goods entering and leaving Iraq, with a few exceptions. Among the exceptions are all products similar to those commodities in the PDS food basket: wheat and wheat flour, imported rice, sugar, imported vegetable oils and fats, lentils and chickpeas,

dried beans, tea, powder milk and infant formula, yellow corn for animal feed, and soap bars and detergents. These products cannot be exported unless the MOT issues a license authorizing the export. It is not specified what criteria the MOT will use to decide whether to issue an export license, and how officers can distinguish between imported and domestic rice, wheat, lentils, and vegetable oil. The new law became effective on April 1, 2004.

The justification for export restrictions in the new trade law is that the government imported those PDS items for distribution free of charge to the population and therefore wants to prevent those items being taken out of the country. But the restrictions also prevent farmers from selling their products outside the country. Farmers are thus penalized twice by the PDS: first the government floods the domestic market with imported rice, wheat, and lentils; then it restricts farmers from exporting their own rice, wheat, and lentils.

The disincentive effects of free food distribution on agricultural production of wheat and other staple products is well recognized, but attempts at reforming the system in the past year have proven ineffective. Two alternative proposals were considered in 2003, one involving issuing food stamps using smart cards, the other asking banks to hand out a cash equivalent of $15 per person per month to replace the food basket. Both were set aside when deteriorating security conditions made it risky to tamper with the food supply on which the vast majority of the population still depends.

REQUIREMENTS OF A STRATEGY FOR RESTRUCTURING THE PDS

Any proposed transition strategy must satisfy certain requirements, among them:

- Maintain social stability and security—no risky experimentation with the people's food supply;
- Ensure the food security of all vulnerable groups, especially those at high nutritional risk, such as children, mothers, the elderly, and institutions such as schools and hospitals;
- Save government financial resources;
- Prove administratively easy to implement and effective in delivering food to the truly needy;
- Enable development of a private market for all food and agricultural products;
- Introduce competitive market prices to reflect supply and demand conditions among consumers, farmers, processors and traders;
- Be politically acceptable to the general population throughout the country;
- Allow the government to withdraw gradually from its current role of deciding what people eat;

- Show significant improved results in the near term and decisive changes in the long term, without causing social disturbances or political instability; and

- Gradually withdraw food assistance from non-needy households and target it at the neediest segments of the population.

SUGGESTED APPROACH: PROPOSAL FOR A PILOT CASH-OR-FLOUR OPTION FOR CONSUMERS

The PDS constrains agricultural recovery because it distorts the market in the agricultural sector. The transition plan for agriculture seeks to remove government controls and create a market-based sector. To this end, we propose a trial of a novel cash-or-flour option for Iraqi consumers, based on the following rationale.

Variety of Foods in Markets

In the first few days of March 2004, members of the transition team visited several markets in Baghdad, including food stores in commercial streets and neighborhood markets in well-off parts of town, as well as those in poor communities. The team was surprised by the variety of products, qualities, and origins of foodstuffs currently available even in poor neighborhoods in Baghdad, and by how well-stocked some of those shops are. Opening the borders and eliminating import licensing has exposed consumers to an impressive array of food choices. The capacity of Iraq's private market to respond to pent up demand for consumer goods is both remarkable and reassuring.

Recycled Wheat Flour

Wheat flour is found in all markets and shops, and from a variety of sources. There are different varieties from Dubai, for example, but the prevalent type is common Iraqi flour. It can be purchased by the kilo or in 50 kilogram bags, as it leaves the factory or the PDS warehouse. We priced these 50-kilogram bags between 7,000 and 9,000 Iraqi dinars (ID), though we hear reports slightly above and below this range, depending on location. These bags are likely recycled PDS flour, because there is no reason for millers to purchase wheat in the open market to sell at such low prices in competition with the PDS zero-cost flour. This means some of the families receiving PDS flour are selling their rations to traders at a lower price still—perhaps 5,000 to 6,000 ID (roughly $4) for the 50-kilogram bag.

Cost of PDS

The cost of the PDS free food for all Iraqis has been estimated at $180 million to $200 million per month, or close to $2.5 billion per year. In more recent months there has been a rapid increase in prices of wheat and rice, which will raise the cost of the program even higher. Wheat prices have climbed from $135.90/mt in January-March 2003 to $157.50/mt in February 2004 for US SRW #2 Gulf; and rice prices have jumped from $182.50/mt in January-March 2003 to $200.00/mt in February 2004 for Thai 25 percent.

Cost of Wheat to PDS

The main item in the ration cost is the 9 kilograms of wheat flour. We can roughly estimate the cost of flour: Lloyd Harber, the U.S. Department of Agriculture's advisor to the CPA, estimated that last year it cost PDS $250 per ton of imported wheat placed in Baghdad, after allowing for ocean transport, inland transport, insurance, and commissions. These estimates are approximate because it is difficult to attribute overhead costs of the system to individual items in the food basket. The cost of World Food Programme officers in Rome coordinating procurement, contracting, and logistics, for example, cannot be separated by product.

Cost of Wheat Flour

PDS uses private sector flour mills in Iraq to process wheat into flour with an extraction rate of approximately 80 percent. This means the raw material cost per ton of flour is roughly $312 per ton. The miller is paid $10 per ton of flour; adding bagging, storage, and delivery costs, the final cost reaches an estimated $330 per metric ton, or 33 cents per kilogram.

A 50-kilogram bag of flour costs PDS approximately $16.50, or 25,000 ID (500 ID/kilogram). It costs PDS nearly 4,500 ID ($3) to provide 9 kilograms per person per month.

Twenty Three Cents on the Dollar

The same bag some recipient families are selling for 6,000 ID cost the government 25,000 ID. The net benefit to those families is therefore only about 23 percent of the cost to the government. In other words, PDS paid $1.00 to deliver $0.23 of net income to those families. Not all families are monetizing their flour ration (that is, selling it for cash), but enough families do it to create a thriving a black market in recycled flour.

Arbitrage Opportunity

When the values of benefits to costs are so far apart, there is a large potential for arbitrage. A cash payment of, say, 50 cents on the dollar would save the government half of its cost and

more than double the income the family receives from selling the flour. Both the government and the families would be better off financially if they followed the arbitrage option—and both would be spared the trouble of doing the transaction with flour instead of cash.

Empowering Families

Therefore, the transition team proposes to carry out a small-scale case study—in a few selected urban environments—to test the viability of allowing families receiving PDS food rations to decide every month whether:

- To take their flour allowance in kind (9 kilograms per person), or
- To take a cash allowance (3,000 ID per person)

Parallel System: Standard Plus Option

In distribution centers selected for this cash-or-flour option program, the current system of food distribution will continue exactly as now, except for the option to choose flour in kind or a cash payment. All other items in the food basket will continue to be delivered the same way as now. The cash payments will be made by the managers of the distribution centers and reimbursed by the PDS program when the flour coupons are presented for redemption once or twice a month. An appropriate fee must be paid to the distribution center for the service, say 250 ID per person. (Currently, the centers receive 50 ID per person for distributing flour). Most urban food distribution centers serve approximately 200 families, or 1,000 persons. If PDS redeems coupons for cash upon presentation, there is no need to advance money to the distribution centers.

Voluntary and Reversible Decisions

It is important to note that what is proposed is a voluntary choice by the families. They retain the option—every month—of making a different choice, and they are free to change their minds the following month. The value of the cash payment can be adjusted periodically to allow for inflation, or to encourage more families to take the cash option. When we have offered this option in urban settings, some recipients take the cash without hesitation, while in rural settings farmers prefer the flour allowance. The optional pilot programs are therefore initially recommended in urban areas; if they are successful, then we can proceed to trials in rural areas.

Expected Price Rise

It is very likely that the price of recycled wheat flour will quickly rise if a large number of recipients decide to take the cash option because there will be less flour in the market and greater demand for it. However, the price of recycled flour can only rise as high as the price

of imported flour of comparable quality. Alternatively, private millers will respond to competitive flour prices by milling their own wheat to satisfy the growing flour demand. Both these developments should be welcome as it further relieves government officials from direct involvement in a wheat and flour business for which they are not well suited.

Imported Flour Available

One of Baghdad's best known pastry shops requires highly refined flour for its cakes and pastries, flour not available from local flour mills. The owner and manager of the pastry shop uses refined imported flour from the Emirates, purchased in Baghdad from a local distributor. He pays $240 per metric ton. For less demanding products, he uses less refined imported flour at a lower cost. The same flour dealer could get imported flour of comparable quality to PDS Iraqi flour for $200-$220, but none is imported because recycled PDS flour can be purchased on the black market for much less. There are already private sector dealers that can sell PDS-quality flour for much less than it costs the PDS to provide.

Market for Iraqi Farmers

One major benefit arising from urban families opting for cash instead of flour is that it reopens the market for all types of locally produced foods. Free distribution of food baskets denies Iraqi farmers access to their most obvious and natural market.

Government Purchase of Wheat

The MOT announced that this season it will purchase local wheat from farmers at prices ranging from $180 per ton for grade 1 to $130 per ton for grade 4 (unfit for human consumption). Only a small portion of production is grades 1 and 2. Flour from 100 percent domestic wheat is not at present suitable for making bread because, among other things, the gluten content is too low. PDS's declared policy is to blend 60 percent imported with 40 percent domestic wheat to get acceptable-quality flour, but we hear of plans to improve the quality by increasing the ratio to 75 percent imported, 25 percent domestic. Consumer preference is for 100 percent imported wheat flour.

Buyer of Last Resort

Farmers need a market for their wheat production, but it is neither necessary nor advisable for the government to purchase the wheat from farmers. Rather, government can guarantee a floor price and become a buyer of last resort only when the private market price falls below that floor price. Farmers are likely to sell their best wheat to private traders at market prices and poor-quality grain to the government at the floor price. Private commercial buyers are better than public agencies at adjusting prices to quality and thus encouraging farmers to improve quality or raise varieties that best match consumer preferences.

Buy Flour from Millers

We also recommend that the MOT introduce a parallel program to purchase wheat flour directly from Iraqi millers at a set price, say $300 per ton, so as to encourage millers to purchase wheat directly from farmers.

Precise flour quality specifications and a minimum percentage of local wheat content can be required. The set price is lower than what it costs PDS at present to provide a ton of flour, but sufficiently high for millers to buy wheat from local farmers above the official floor price. In later years, a competitive tendering system might be put in place purchase flour, replacing the set-price system. The proposed flour procurement is to run concurrently with the present wheat procurement system, not replace it.

Private Wheat Marketing

In addition to saving PDS funds, having the MOT purchase flour directly from millers encourages the development of a private sector trade in domestic wheat, encourages millers to import wheat directly, encourages millers to provide a variety of flour types suitable for many alternative products, and spares the MOT from becoming involved in the business of buying, storing, and distributing wheat, activities best performed by private traders and farmers.

Sell Wheat to Millers

Once millers begin to respond to commercial demand for flour, they need access to wheat, either imported or domestic. Since the quantity of flour-grade domestic wheat is limited, millers also need access to imported wheat. PDS can sell imported wheat to millers at cost.

REQUIRED STEPS

If the suggested approach is accepted, the PDS and the MOT can select a set of representative neighborhoods for a pilot program granting households the option to take their flour allowance in kind or in cash. Priority should be given to neighborhoods in major urban centers, but some in smaller towns can also be included. Preliminary indications are that farmers in rural communities strongly prefer their food rations in kind.

The neighborhood food distribution center can be assigned and entrusted with responsibility for handing out cash or flour to beneficiaries. Flour is often distributed at outlets different from other food basket items; in such cases the flour distributor would be responsible for issuing cash allowances or flour to consumers. The value of the cash allowance should be clearly posted for public view at each distribution center. Neighborhood flour distributors

present the monthly coupons to the PDS for reimbursement either in kind as flour or in cash for the face value of the cash allowance. PDS may pay a small fee to the flour distributor for disbursing cash, since they regularly receive a small fee from consumers for their services.

An urban neighborhood distribution center serves on average 100-200 families, or 500-1,000 persons. Monthly disbursements of 3,000 ID per person can amount to at most 3 million ID or its equivalent quantity of flour, or a combination of cash and flour. District-level PDS centers need to keep appropriate provisions of cash on hand to reimburse local food distributors when they present the cancelled food ration coupons for redemption.

A separate and independent organization should carry out a monitoring survey of food consumption and the nutritional status of families in the selected pilot neighborhoods to determine whether the shift to cash allowances has improved or worsened the food intake of family members, especially children and the elderly.

ANTICIPATED RESULTS

Initially, families will be hesitant about their ability to purchase equivalent foods in the market at commercial prices. After a couple of months, we expect more than half of the families in the pilot program to prefer the cash allowance in lieu of the in-kind flour allowance. Families opting for the cash allowances will be able to have better quality and greater variety of foods, which means a more balanced diet. Better-off families are more likely to choose the cash allowance than poor families. The PDS will become better targeted towards the poor as a result.

For every person that takes the cash allowance, the PDS program saves 1,500 ID ($1), as the cash allowance (3,000 ID) is less than the current cost of providing flour directly to consumers (4,500 ID). A private commercial market for wheat flour will be strengthened as food suppliers respond to the needs and preferences of those receiving cash allowances.

Low prices currently found in the market for recycled flour will gradually increase with the demand for flour from families receiving cash allowances. Market prices for flour will eventually reach parity with comparable imported flour. Prices for fruits, vegetables, dairy, meats, and poultry products will also likely increase as demand for those items from families opting for cash allowances can afford to purchase more nutritious foods.

PDS wheat purchasing requirements will decline as demand for direct in-kind delivery of flour declines. On the other hand, PDS will increasingly issue cash disbursements to local flour distributors in exchange for the flour coupons surrendered by consumers. Private millers will begin to procure their own wheat supplies either domestically or abroad, and begin to produce several types of flour to satisfy diverse preferences for different needs: traditional bread, pastries, pasta, and so on.

ANTICIPATED POTENTIAL PROBLEMS AND SOLUTIONS

Voluntary Approach to Avoid Social Disturbances

Previous attempts at introducing reforms in the PDS faltered for fear that families might complain about replacing their food rations with a cash allowance at a time when food prices were very volatile. Market conditions are slightly more stable now. To avoid potential complaints, the suggested approach is voluntary so that families retain the option to take their monthly flour allowance in kind or in cash, whichever they prefer.

Avoidance of PDS Job Losses

Another fear in earlier reform attempts was that people operating the 44,000 food distribution centers will suddenly become unemployed and therefore willing to demonstrate their dissatisfaction. In our proposed approach we continue using those food distribution centers as channels for distributing the flour and cash allowances, and therefore these employees will benefit from the new system as it opens new market opportunities for them.

Cash to Mothers to Avoid Misuse of Fund

A major concern of family welfare caretakers is that heads of household might use the flour cash allowance to purchase cigarettes, liquor, or other nonessential items instead of food for the family. Whenever possible, the cash allowance should be handed out to the mother of the family, but this is often not possible under current circumstances. A household nutrition survey to monitor the nutritional status of families receiving cash allowances and those receiving in-kind flour will address this issue.

Availability of Flour in the Market

Once families start receiving flour cash allowances their demand for commercially available flour might exceed the current supply in the markets. Much of the flour currently available is recycled Iraqi flour that recipients sell to traders for a fraction of the cost. When cash allowances are issued, those recipients will take the allowance instead of the flour, and the supply of recycled flour will decline. Fortunately, imported flours of many grade qualities from Gulf countries are also available in the market and there are established market channels supplying imported flour to commercial establishments. Eventually, the price of recycled Iraqi flour will approximate the price of comparable imported flour.

Market Price for Flour Rises

It is to be expected that the current low prices of recycled Iraqi flour in the market will not remain so. As soon as cash allowances reach a significant threshold, those prices should be expected to rise and soon reach the price of comparable imported flour. The value of the cash allowances might be adjusted to reflect those price changes overtime.

Low Risk of Theft and Fraud of Flour Coupons.

Some fear that once flour coupons can be redeemed for cash, theft of food ration cards will become a major problem. Each family, however, is assigned to a single flour distribution center handling only a few hundred families. Thieves redeeming stolen coupons would risk easy detection. Each coupon already carries the identification number of the food ration card so that counterfeit coupons can be detected and traced back to the originating center.

Handling Cash in Iraq's Cash Economy

Security concerns regarding handling of cash in Iraq are in our view overstated. Iraq is a cash economy. Payment with checks is not done because few Iraqis have a bank account. Employees are normally paid in cash every month. Despite the considerable value of cash handled, we heard of only a few cases of people being mugged and losing money. The experience from several projects that disburse large amounts of cash to be distributed to a large number of recipients throughout the country has been reassuring. The government carried out a massive currency conversion a few months ago with remarkably light security and few incidents. The amounts involved in the PDS food distribution are very small. A distribution center servicing even 200 families (1,000 persons) would be entrusted at most $2,000 per month, if everyone takes the cash option. At any rate, the value of the cash entrusted will be less than the value of the food products currently entrusted in kind to the same distribution centers. Most distribution center managers are shopkeepers with experience handling cash and bookkeeping.

Targeting and Means Testing

Many households are not claiming their food rations and others receiving food aid could safely be excluded. However, under the uncertain conditions at this time, excluding large numbers of families is politically sensitive and therefore caution requires that those changes be postponed. The proposed approach retains initially the current universality of coverage until such a time that it becomes technically and politically feasible to identify households that do not need food aid. Later on, when the political situation stabilizes and employment payrolls become accessible to the PDS, the issue of restricting food aid to needy segments of the population will be advanced.

Other Food Assistance Channels

Children in poor families are often among those most at risk of nutritional deficiencies, especially when the distribution of food within the family does not address their specific nutritional needs. It may be necessary to set up a parallel program for nutritional supplementation targeted at infants and children via neighborhood maternal clinics, pre-school programs, and lunch programs in primary schools. Other alternative food supplementation programs might be needed for families without an income earner, managed through the mosques or community organizations. It will be more effective to use these alternative supplementary channels than retain the system of in-kind food delivery for the whole population.

ANNEX 3

CAPACITY BUILDING WITHIN THE MINISTRY OF AGRICULTURE

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APACITY BUILDING WITHIN THE MINISTRY OF AGRICULTURE

BACKGROUND

The Ministry of Agriculture (MOA) brings the leadership necessary to meet the upcoming tasks and challenges inherent in rebuilding Iraq's agricultural sector. Over the past 30 years, there have been tremendous changes in Iraq's political and agricultural landscapes. The recent wars and embargoes have wrought significant damage to the agricultural sector. Although the past has constrained progress, the mood in the Ministry is very positive and forward-looking. The ARDI Project shares this mood and partners with the Ministry in support of its forward agenda. To this end, the partners held a Vision Workshop in early January 2004[1].

During the Vision Workshop, senior staff deliberated the future of agriculture in Iraq. A "vision" was articulated which considered what the agriculture sector would look like and what the Ministry, as well as other's, role in shaping the sector would be. One of the primary outcomes of the Workshop was the general consensus that reaching the vision articulated would require adjustments in the MOA itself. The Minister had already earlier proposed a number of structural adjustments[2]. The mechanism for identifying and implementing additional adjustments would be embodied in a Capacity Building Program.

This report presents a MOA Capacity Building Program. The purpose of this report is:

- To explain the approach used to develop the MOA Capacity Building Program and results of the approach;
- To describe the recommended Capacity Building Program; and
- To outline a process for Ministry review and improvement of the Program.

APPROACH

A participatory approach, involving Ministry staff from the National and Governorate-levels as well as private sector business people and farmers, was used to develop the Program. [3] In addition to informal discussions with MOA staff, the approach used four methods. These were a review of existing documentation on the agricultural situation in Iraq; a series of private sector roundtables held in several locations in Iraq; the Vision Workshop held with senior MOA staff; and interviews and visits with a wide-array of MOA staff from various levels. These methods are further discussed below.

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[1] See Annex 4A for further details of the Vision Workshop.

[2] *Ministry of Agriculture – The Present Situation, Constraints and Objectives,* Dr. Abdul Amir Rahima Al-Abood, Minister of Agriculture, September 2003.

[3] Annex 4B gives a detailed description of the approach.

Documents Review. Although current data on Iraqi agriculture are very limited, several assessment and strategy documents have been written by various organizations. For example, the World Bank and United Nations organizations such as FAO, WFP and UNDP have produced documents on the Iraqi situation. These documents were reviewed by the team and provided the backdrop for the Capacity Building Program.

Roundtable Discussions.

In December 2003, ARDI sponsored roundtable discussions in Erbil, Sulaymaniyah, Baghdad and Hillah. The roundtables provided the opportunity for participants, private sector businessmen and women and farmers, to discuss their ideas about the future of agriculture in Iraq. Their ideas offered the private sector and farming community view of the future and were used as input into the MOA Vision Workshop.

Vision Workshop

The MOA start-up Vision Workshop laid the foundation and provided the critical framework for the development of the Capacity Building Program. Annex 4A gives further details of the Workshop. At the Workshop, the more than fifty participants essentially agreed that the agricultural sector would:

- Be market-led;
- Provide significant employment opportunities;
- Be supported by government in partnership with the private sector;
- Compete successfully on world markets;
- Attract local and foreign investors; and
- Support national food security.

Workshop participants also determined that in this new vision, the MOA would:

- Assist farmers with relevant research, extension and demonstrations;
- Provide support to gain access to resources, modern technologies and new markets; and
- Transfer responsibility for input supply and commercial activities to the private sector.

The typical functions of a Ministry of Agriculture in a market-led economy were also discussed at the Workshop. These are outlined in the chart below. There was overall agreement that at some future point, the MOA would need to have full capability in each of the functional areas identified in the chart.

Typical MOA Functions In a Market-Led Economy

Policy & Economics	Technical	Regulatory	Management
Policy Formulation	Research & Extension	Quarantine	Planning
Economic Analysis	Plant protection	Seed Certification	Finance & Budgeting
Data Collection	Animal Protection	Food Safety	Human Resources
Information Dissemination	Animal Health	Quality Assurance	Legal affairs
International Cooperation (Donor Coordination)	Soil and Water	Land Tenure	Public Awareness

Promotion of Private Sector
Rebuilding Iraq's Agriculture Reputation
Rebuild Public Confidence

Interviews and Visits

Through interviews and visits with various members of the MOA, additional information regarding Ministry strengths, weaknesses and opportunities was obtained. Based on this information, profiles for a majority of the sub-units within the Ministry were developed. These units are shown in the diagram below and include the Directorates, State-owned Companies, Development Programs and State Boards of the MOA. Annex 4C gives detailed profiles of units. Profiles describe unit function, organizational structure and issues of concern within the unit. The Capacity Building Program was further constructed using information derived from profiles.

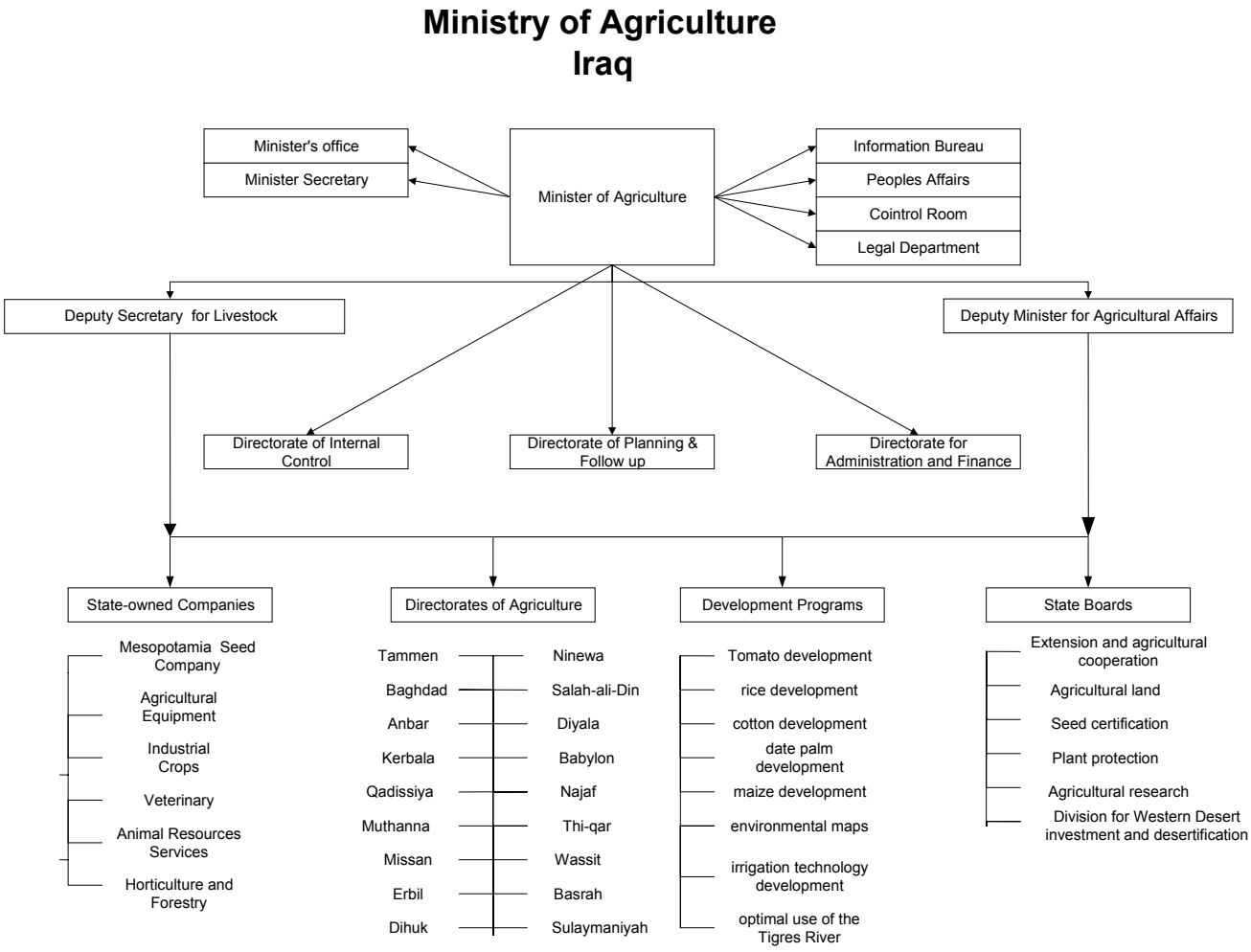

Diagram courtesy of MOA Directorate of Planning and Follow Up.

RESULTS OF APPROACH

Cross-Cutting Areas

The results of carrying-out the participatory approach described above provide a fairly comprehensive picture of the Ministry of Agriculture as an institution. The results identify a number of critical areas for intervention that cut-across institutional boundaries of departments and administrative levels. These cross-cutting areas are summarized below and further discussed in the Capacity Building Program.

The Science and Technology Gap

Across the MOA, senior research and extension staff repeatedly say they believe they have a fifteen year "science gap". The gap may well be broader than just science. It cuts across both science and technology. Before, but particularly since, the 1991 war and the resulting embargo, MOA professional staff have been out of touch with many of the new developments in their field. They have not received scientific and technical literature. They have not traveled to conferences nor participated in international M.Sc. and Ph.D. programs. They have not had access to Internet and the latest computer technology.

This science and technology gap also affects MOA facilities. Much of the equipment is obsolete. Equipment developed in the last 15 years is largely absent, for example, GPS technology. Finally, there are new technologies related to plant, animal, forestry and forestry products that, as they are brought into the MOA system, will benefit the agricultural sector in general and the farming community in specific.

Enabling Policy and Regulations

Policy and regulations are discussed in more detail in other parts of this report. Several, that will need to be reviewed and/or developed to enable the growth of a market-led agriculture sector, are highlighted here and include:

- Restrictions on use, transfer of tenure and private ownership on land distributed to farmers as a result of the agrarian reform initiated in the 1950s;[4]
- Regulations concerning pesticides, acceptable ingredients, their distribution and acceptable use by farmers;
- Restrictions on the use of private veterinarians in national vaccination programs against epidemic diseases; and
- Seed certification policies to ensure that they promote entry of the private sector while applying adequate regulations of seeds produced or imported into the country.

Without suitable policies, the MOA will be limited in its ability to facilitate and support its vision for agricultural reform in Iraq.

Damaged and Looted Facilities

Many MOA facilities are non-functional due to damage and/or looting. Ministry Headquarters in Baghdad were completely looted. Buildings at Abu Ghraib were badly damaged. Laboratory and other equipment were stolen. Key reference bases such as the seed

[4] This affects over 8 million donums and is a disincentive to production and investment. This matter is discussed in detail in Annex 10 on Land Tenure.

gene bank, entomology collection and herbarium were destroyed. A similar situation exists for Directorate of Agriculture facilities in the governorates. Research and extension facilities, veterinary clinics and quarantine stations have all been adversely affected.

Some facilities have been, and others are currently being, rehabilitated. MOA Headquarters building has been rebuilt and re-equipped. The buildings at Abu Ghraib are being repaired. Some facilities in the governorates at district and sub-district levels are under renovation. And ARDI has initiated work on several veterinary clinics. Nonetheless, there are many more facilities requiring renovation and re-equipping.

Skills Development and Academic Qualifications

Two main factors have influenced the need for skills and academic development across MOA functional areas. These are:

The Knowledge Gap. This has been discussed above. One person expressed his view of this by saying he felt 'like a bird that has been in a cage for the past 15 years, and now someone has just opened the cage door'. MOA staff, along with the vast majority of Iraqis, have virtually been cut-off from the rest of the world. They have had limited, if any, opportunity to learn about new developments in their areas of expertise and responsibility.

Loss of Qualified and Experienced Staff. A significant number of qualified people have been lost to the system. Some left the country in search of better opportunities. Others left due to persecution by the previous regime. Others have retired and not been replaced by those with similarly high qualifications. The Director General of Research cited his Directorate as an example. In 1981 there were 80 Ph.D. staff, 120 M.Sc. staff and 400 B.Sc. staff. In 2004 these numbers had fallen to 16 Ph.D., 31 M.Sc. and 100 B.Sc. staff.

Many staff need to be familiarized with the new approaches, systems and equipment now available to help them to carry-out their work. In addition, the move to a market-led sector will require various staff to gain new sets of knowledge, skills and attitudes and renewed or upgraded qualifications.

Systems Development and Upgrading. While some systems necessary for the proper functioning of the Ministry are in place and functional, many need upgrading. As well, some new systems need to be developed.

Computer systems are a prime example. The few basic systems currently available to MOA staff are not widely accessible and are not in a form that will provide the greatest benefit to the Ministry. For instance, there is no broad-based network currently in place within the Ministry. There do not appear to be protocols established for the use of computers such as filing protocols, access, back-up and standard formats for data collection. It is critical that, at this time when the Ministry is rebuilding its records, such protocols be put in place to ensure information is stored in an appropriate format, is easily accessible and is backed up so as to minimize the risk of data loss.

As mentioned previously, one of the consequences of the knowledge gap is that many staff are unaware of currently available systems. It is thus necessarily difficult to judge what is good or bad. To rebuild this knowledge, MOA staff need to be exposed to a range of options. They will benefit from discussing options with their colleagues and counterparts in similar organizations and situations in other parts of the world. As they broaden their knowledge of what exists, they are better able to develop systems and solutions appropriate to their needs and situation.

Human Resources. Estimates suggest the MOA has a total of around 14,000 staff. Of these, 5800 are located at Directorates of Agriculture in the 15 governorates. Currently it is estimated that over 40 percent of the Ministry's human resources are involved in commercial activities. For example, they are transporting, distributing and selling subsidized fertilizer, seed and pesticides. They are importing and selling poultry supplies and other inputs. They are producing and selling fruit tree seedlings. They are setting the prices for wheat, sunflowers and other strategic crops. Put simply, they are participating in economic activities across the spectrum of agriculture in Iraq—supplying agricultural inputs and intervening in the allocation, production and pricing of agricultural commodities. Some services, though commercial under a strict definition, do serve a vital public interest. For example, some veterinarian services and tree seedling production for reforestation activities are in the public interest.

Realigning, redeploying and retooling Ministry of Agriculture employees presents a daunting challenge. Added to this challenge is the major change effort required by the Ministry to realign itself from years of focusing 40 percent of its mission, resources and energy on supplying agricultural inputs and on intervening in the allocation, production and pricing of agricultural commodities to focusing on a market-led economy.

Public Awareness. The transition from a centrally-planned to a market-led agricultural sector will have far reaching implications. Support for the transition is likely to increase as stakeholders—the farming and the rural community, the private sector, MOA as well as other Ministry staff, development partners and the international community—are kept informed of plans and progress and as they have opportunity to input into the change process. A public awareness program to increase understanding of the realigned role of the MOA and the private sector in agricultural development in Iraq and to build new linkages within and across stakeholder groups in support of market-driven agriculture is called for.

Gap Analysis

Given the results of the participatory approach described above, a gap analysis was carried-out to identify the gaps between what capacity currently exists in the Ministry and what capacity would need to exist to achieve the new vision. The Capacity Building Plan, described below, thus seeks to address the identified gaps in capacity.

THE CAPACITY BUILDING PROGRAM

The overarching goal of the Capacity Building Program is to ensure that the Ministry of Agriculture is capable of enabling and guiding market-led agricultural growth and development.

To support the achievement of this goal, there are seven broad objectives. These are listed below.

Objective 1. The structure, management and capabilities of the MOA are aligned with its functions in the newly-envisioned agricultural sector.

Objective 2. The entry of the private sector into traditionally state-run commercial activities and investment by the private sector in agriculture is enabled and promoted by the MOA.

Objective 3. New production and processing technologies, practices and markets are identified, introduced and promoted to farmers and to the private sector by an active and linked MOA research and extension capability.

Objective 4. An effective plant and animal protection capability that ensures food safety and security and conforms to international standards is achieved.

Objective 5. Accurate information on the market-based agricultural sector to fully inform management, policy-makers and the private sector is provided by a strengthened MOA economic monitoring and analysis capability.

Objective 6. Disadvantaged groups and the re-establishment of rural communities are supported by the MOA to allow subsistence farmers to take advantage of market incentives for agricultural production.

Objective 7. Iraqi public and private sectors and international partners are aware of Iraq's agricultural development agenda, its benefits and the roles of the MOA and the private sector in it.

Each objective is further discussed below. Recommendations for Ministry consideration that relate to the objective are also presented[5].

[5] The proposed capacity building program is outlined in a summary Logical Framework in Annex 4E. In addition to providing a summary of the program, the logical framework offers an approach to setting performance indicators; means of verifying performance; and identifying external factors that may have an impact on the achievement of the various objectives and outcomes.

Objective 1. The Structure, Management and Capabilities of the MOA Are Aligned with Its Functions in the Newly Envisioned Agricultural Sector.

The move to a market-based agricultural sector will affect the MOA in a number of ways. The Minister has already indicated his intention to change four of the current State Companies into State Boards.[6] These include the State Company for Industrial Crops, the State Company for Horticulture and Forestry, the State Company for Animal Resources and the State Company for Veterinary Services. This leaves the State Company for Agricultural Supplies and the Mesopotamia Seeds Company. These latter companies have both commercial functions (e.g., supply of machinery, fertilizer and seed) and core functions of the Ministry (i.e., research, quality control, certification, inspection and extension activities).

The State companies are valuable assets. If they are to be phased out, the Ministry should consider several options to attempt to maximize the benefits of this process. Alternatives include:

- Take the State Company in as a State Board and slowly divest it of its commercial functions. However, this option limits opportunities that may arise from the sale or privatization of the asset.

- Commercialize with a view to privatization. This option may enable the Ministry to build-up the current value of the asset and, with a view to receiving a reasonable value for the asset while affording opportunity for staff to move across to the privatized entity. Before taking this direction, the MOA would need to ensure that the investment in building-up the asset will lead to an equivalent or greater return through the privatization process.

- Privatize and allow the private sector commercialize. This would involve a direct sale of the company as a going concern, stripped of those core functions that best belong with the MOA. This would be less risky than the previous option. But, it may not realize a greater return both in financial or social terms. It is likely that there are buyers who would see the opportunity to purchase such a company as a good market-entry strategy.

- Wind-up operations and sell-off physical assets. It can be expected that such an approach would not realize a significant return nor afford employees the potential opportunity of staying with the entity. These employees would then have to be absorbed by the MOA or given redundancy.

- In addition to these state companies, there are other units of the MOA involved in commercial operations. For instance, many staff currently based at the Governorate level are involved in inputs distribution. As the MOA moves away from purchase and distribution of inputs, such staff will need to be re-deployed.

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[6] *Ministry of Agriculture – The Present Situation, Constraints and Objectives,* Dr. Abdul Amir Rahima Al-Abood, Minister of Agriculture, September 2003.

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In a market-led economy, the MOA will have changed and gained new functions. These include the need for a greater role in regulatory control; the need to withdraw from commercial activities associated with input supply and purchase of outputs; and the need to re-align planning functions from centralized-control to one of supporting a market-led agriculture sector. In addition to these, there are new functions including supporting disadvantaged groups and expanding economic and statistical analysis capabilities.

Changes to structures and functions will likely result in the need to create new State Boards or merge functions from one Board to another. Such a possibility includes integrating current State Company research responsibilities into the existing State Board for Research.

Change will necessitate an overall review of MOA structure including its management and administration structures. While many management and administration systems are in place, there will be options to improve current approaches, in light of awareness gained from interactions with similar organizations in other parts of the world.

Change in functions, structures, and management and administration will influence current staff deployment. Certainly some staff will have to be re-deployed and/or retrained. A detailed analysis of the impact on staff should be undertaken with proposed response and implementation strategies.

The Ministry is still rebuilding following the conflict and the looting that followed. Computer systems, knowledge-based systems, communication systems and human resources management systems are some of the systems that are currently being redeveloped. These also will need to be reviewed taking into consideration functional and structural changes. This should be undertaken following an analysis of institutional needs and staff's increased awareness of the scope of systems that are now available to assist them with their responsibilities.

The recommended next steps for the MOA in restructuring and introducing new management systems follow.

1. Review the MOA structure and revise it as necessary. Develop a phased implementation plan to ensure MOA structure is in accordance with its functions and responsibilities under a market-led agricultural sector.

2. Following on from the structural review, develop and implement a Strategic Management and Administration Plan. This Plan would review current management and administration structures, procedures and protocols to ensure they adequately address the needs of the revised structure and functions.

3. Following on from 1 and 2 above, establish a Human Resource Development Plan. This Plan would review staff assignments in accordance with the needs of the revised structure and identify a plan for implementation of the various resultant staff redeployment and training.

4. In accordance with revised structures and management and administration needs, develop and implement a MOA Systems Development Plan.

Objective 2. The Entry of The Private Sector into Traditionally State-Run Commercial Activities and Investment by the Private Sector in Agriculture Is Enabled and Promoted by the MOA.

As discussed previously, the role of the MOA in a market-based agricultural sector is to assist and support farmers to produce in response to market demand rather than directing them according to Government production plans. In addition, the MOA needs to create an enabling environment. This environment needs to promote the role of the private sector in supply of inputs, services and access to markets for agricultural products. To create this enabling environment, the MOA has to ensure the government's policies and regulatory framework supports the role of the private sector.

There are a number of key government policies that exert a negative influence on market-led growth. Some examples include:

- Purchasing and distribution policies related to the Public Distribution Systems;
- The high level of input subsidies provided by government;
- The Government's policy of centrally planned agriculture;
- Policies, laws and regulations related to agricultural credit;[7] and
- Policies, laws and regulations related to producer associations including Water Users Associations (WUA).

As discussed in the Main Report, the Ministry has already begun moving away from input subsidies and market controls. The next step will be for the Ministry to carry-out its internal analysis of these issues and formulate policies that are consistent with and supportive of a market-led agriculture sector.

Access to finance will be a major driving force for sector development. Financing will be important whether it is micro-finance for small scale producers, rural finance for larger producers or finance to fund large scale developments such as processing plants. The MOA should not get into the business of finance. However, it should take an active role in advocating for the importance of such finance for the rural sector and for rural industry. It should advocate for the re-establishment of institutions that can facilitate such finance. This includes the Agricultural Cooperative Bank and/or other similar institutions.

Next steps recommended for action by the MOA include the following.

[7] See Annex 9 for discussion of issues related to agricultural credit.

1. Continue to clarify policy areas that may influence a) a market-based sector and b) the entry of the private sector into traditional Government commercial support functions.

2. Undertake data collection and analysis to inform management and policy makers of key issues surrounding such policy areas.

3. Develop MOA strategies and policy positions as may be required to promote MOA position to policy decision-makers.

Objective 3. New Production and Processing Technologies, Practices and Markets Are Identified, Introduced and Promoted to Farmers and to the Private Sector by an Active and Linked MOA Research and Extension Capability.

The findings within the research and extension functional sector of the MOA highlight some of the basic issues that have resulted from years of isolation from world development trends. It also points to damage associated with conflict and social instability. There is a need to re-establish facilities as well as raise awareness and develop skills associated with new approaches and innovations. As well, there is need to strengthen the Ministry's knowledge-base.

This objective relates not only to the State Boards of Research and Extension but also to the State Companies for Horticulture and Forestry, Industrial Crops, Veterinary Services and Animal Resources. All of these have important responsibilities related to research and extension.[8] A key to improving farmer livelihoods will be how their collective efforts are best focused to respond to farmer needs in a market-led economy. How the various programs and actors involved in research and extension will be organized institutionally requires further examination and substantial discussion.

A lack of coordination is one factor limiting the effectiveness of extension and research services. A lack of coordination results in limited capability to introduce, promote and train farmers in new technologies and farming practices. Extension services have a broad mandate to raise awareness, educate and promote sector-wide matters to farmers. They should be seen as the prime interface between the MOA and farmers and others in rural communities. This mandate should extend to all factors associated with plant and animal production, awareness of rural issues, government policy and regulation and innovation. To accomplish this requires strong links and regular communication with all functional units within the Ministry as well as awareness of other peripheral factors relevant to farmers.

A further factor that emerged in discussions is that there is a widespread demand through the Ministry for an improved knowledge-base. Both Extension and Research have identified the

[8] See Annex 4C, for a more comprehensive discussion of capacity building needs in the State Board for Research and in the State Company for Horticulture and Forestry.

need to re-establish their knowledge-resource base. In this context, this includes: libraries, internet, computer-based resources and strategic collections such as the gene bank, herbarium and botanic garden. There is a great detail of consideration within functional units about what they need. There is also some recognition of the value of combining needs of functional groups to ensure the development of a more comprehensive knowledge-base support system. An example is the program developed by research and extension entitled: "Implementation of Information and Communication Technology to Strengthen Research, Extension and Farmer Linkages" (see Annex 4D for details). The approach of developing a systems-wide knowledge base should be extended to other functional areas within MOA. This would help to ensure consistency in the design, user interface and access to information collection and presentation. Coordination would also limit overlap and would enhance data security.

Three other areas require attention. These relate to technology, transportation and program development.

Inventory of Recommended Practices and Improved Technologies.

What is available to extension to extend to the farming community is not entirely clear. The status of recommended practices and improved technologies should be examined and results documented so that practical information on available practices and off-the-shelf technology is made readily available to extension workers for dissemination to farmers. An inventory of available practices and technologies not only documents what exists, but also points to areas where improved practices and technologies are needed.

Transportation

Typically, the mobility of field extension workers is problematic at best. This is also the case in Iraq where transport issues will need to be addressed. Increasing the forms of communications between extension and farmers may decrease the need for mobility as will adopting a group approach to extension.

Program Development Capacity

While there are national-level commodity programs (e.g., tomato, rice, cotton) developed and being implemented in the field, governorate-level capacity to develop specific programs which meet needs of local farmers is limited. An adult education program for selected extension staff focused specifically on knowledge, skills, attitudes needed to develop strong programs should be considered.

It is recommended that in the area of research and extension, the MOA act on the following.

1. Seek government and or donor support to reequip research and extension facilities to ensure they are fully operational.

2. Institute programs to ensure research and extension staff are exposed to and trained in modern research and extension approaches, methods and practices.

3. Identify and pilot-test alternative institutional arrangements for ensuring research and extension are linked and the expertise available in these areas fully exploited.

4. Promote the development of programs that target improvement of academic qualifications of selected research and extension personnel.

5. Establish a system-wide knowledge-base that captures and allows broad access to up to date and relevant management and technical information.

6. Institute programs which ensure the integration of activities across MOA technical, research and extension functions to ensure maximum transfer of practical knowledge to the various end users.

7. Inventory recommended practices and improved technologies.

8. Investigate the state of field-level transportation for extension workers and develop proposal to enable improved transportation as needed.

9. Create and implement an adult education program designed to improve staff program development skills.

Objective 4. An Effective Plant and Animal Protection Capability That Ensures Food Safety and Security and Conforms to International Standards Is Achieved.

Plant and animal protection responsibilities rest with the State Board for Plant Protection and the State Company for Veterinary Services respectively. Both organizations have been ravaged through impacts of the conflict and from neglect. Plant protection has started to rebuild and has re-established many facilities and services. Animal protection has progressed less far. Their central facilities at Abu Ghraib are still not operational. Equipment within facilities of both organizations needs replacing or upgrading.

As the MOA transforms itself in response to the needs of the market-led sector, plant and animal protection will move away from providing direct delivery of routine plant and animal health products and services. It will concentrate on those plant and animal health issues that are considered vital to national interest. Examples of these are: weevils in the date palm plantations, foot and mouth disease and avian flu in poultry. The farming community should assume the primary responsibly for controlling pests and diseases that are not likely to reach epidemic proportions. Farmers will become more reliant on private sector service providers as they increasingly assume responsibility.

However, as the Ministry withdraws from provision of these services in favor of private sector providers, the Ministry needs to develop an appropriate policy and regulatory environment. This environment should ensure that the private sector provide appropriate and safe products and services. The policy and regulatory framework should be supported with a monitoring framework. The framework needs to maintain an overview of the services provided to farmers and the continued applicability of prevailing policies and regulations.

One area of particular importance to Iraq is the Plant and Animal Quarantine Services. There are 12 points of entry into Iraq on the borders with Syria, Saudi Arabia, Jordan, Kuwait, Turkey and Iran. There are also points at international airports in Baghdad and Basrah and the Port in Basrah. Quarantine facilities are being reconstructed in each of the entry points. Plant Quarantine offices are now currently operating. However, Animal Quarantine offices are not. Iraq now has observer status in the World Trade Organization (WTO). When it becomes a full member, it will be required to abide by international quarantine standards. At this stage, Iraq is not in compliance. Countries receiving Iraq's agricultural exports cannot be assured that Iraq's exports meet international quarantine standards. This was confirmed during recent discussion with quarantine authorities in the UAE. The UAE is a large importer of Iraqi produce including dates and palms. In addition, the MOA needs be aware of regional developments in quarantine such as the move by the Gulf Cooperative Council (GCC) to develop a uniform quarantine law. The basis of this move by the GCC is to free up trade barriers between the GCC states by, for instance, having a single point of entry policy. Iraq may consider ensuring its quarantine standards are in accordance with the GCC as these states will be major importers of Iraqi agricultural produce in the future.

Staff and information resources available to plant and animal protection services have suffered over the past decade. Like their colleagues in other departments, staff have not had access to up to date information or skills development opportunities. Knowledge-base resources such as libraries and files were looted during and after the recent conflict. Staff need opportunities to experience new approaches and developments in their various disciplines. Knowledge-bases need to be rebuilt and integrated with an overall knowledge-base plan for MOA.

Finally, in discussions with MOA staff, there appeared to be a lack of communication and coordination between the various plant and animal protection units in the State Board for Plant Protection, State Company for Veterinary Services, State Board for Research and State Board for Extension. For example, staff cited cases of farmers using the wrong application rates and methods. Cases were given where farmers used pesticide for purposes other than those intended, like poisoning fish or treating lice on their children (resulting in their death). These examples point to a need for farmer education on proper use and application of such chemicals, including the applicable safety aspects. A joint program involving the State Board of Plant Protection, Plant Protection Department in the State Board of Agricultural Research and the State Board of Extension and Cooperation would seem warranted.

It is thus recommended that the Ministry of Agriculture consider the following.

1. Support the re-establishment of plant and animal protection facilities including quarantine facilities.

2. Review the plant and animal protection policies and regulations to ensure they provide adequate control of private sector service providers and farmers, meet current international standards and take account of regional developments and those of other trading partners.

3. Undertake a staff awareness and skills development program to develop the capacity of staff in new technology and approaches.

4. Redevelop the plant and animal protection knowledge-base and integrate it within the overall MOA knowledge-base development.

5. Develop more integration with other units within MOA to take advantage of complementary functions and thus maximize effectiveness and efficiency of service to the agricultural sector.

Objective 5. Accurate Information on The Market-Based Agricultural Sector to Fully Inform Management, Policy-Makers and the Private Sector Is Provided by a Strengthened MOA Economic Monitoring and Analysis Capability.

Currently, the main purpose of the Department of Planning and Follow up revolves around planning national agricultural production and ensuring the necessary inputs are available to support this production. For example, functions of a number of departments within Planning and Follow up are summarized as follows.

- Plant Production Department: Sets plant production indicators and production plans.

- Animal Production Department: Sets animal production indicators and production plans.

- Agricultural Services Department: Determines agricultural production input needs on the basis of established plans.

- Agricultural Machinery Department: Defines agriculture sector needs in relation to machinery and spare parts.

- Plan Coordination Department: Prepares annual investment plans in relation to sectors needs.

As the sector moves to a market basis, farmers make production decisions and the need for such functions decreases. However, there will be increased need for market information to provide accurate support information to management, policy makers and the sector in

general. The Directorate of Planning and Follow up already has a functioning Agricultural Economics Department. The Department is responsible for the following.

- Interpreting the agricultural development policy and strategy into plans and program indicators;
- Calculating agricultural production costs and profits;
- Participating in setting prices of strategic crops on the basis of market movement;
- Studying input prices and output subsidies;
- Identifying and participating in feasibility and technical studies related to Ministry's activities; and
- Providing economic and technical information for management and decision- making.
- In a market-based economy, the role of the Agriculture Economics Department will need to be expanded. In the short term, it needs to continue collecting and disseminating economic and technical information related to such critical issues as subsidy levels and market prices. These are two of the critical issues in the current transition phase. Simultaneously, the Department will have to assess the need for and benefits of alternative approaches to agricultural sector growth and stability such as the use of support prices and tariffs.

The Department will need to assist the MOA in assessing the implications of various policy and regulatory directions. For instance, the Department would have a vital role to play in assessing the impact of a policy to purchase Iraqi wheat—as a replacement for imported wheat in the production of flour—for the food basket.

In the longer term, the Agriculture Economics Department will need to continue its analysis of national trends and undertake sub-sector analysis/feasibility studies (such as the wheat and sheep sub-sectors). It will also need to analyze international trends and their impacts on Iraqi agricultural industries. Furthermore, it will need to assist the MOA with the formulation, development and analysis of MOA special programs in support of special needs within the sector.

The Department will be a critical unit in assisting the MOA with high quality and accurate data and analysis to inform policy and management. At present, the Directorate of Planning and Follow up does not have the level of trained staff and associated resources to meet this increased demand for economic analysis and policy formulation.

In addition, the Directorate of Planning and Follow up should take increased responsibility for oversight of all planning functions and activities within the MOA. It should be responsible to the Minister for oversight of all strategic planning activities, develop appropriate frameworks for sub-sector planning and provide training and support of staff

assigned to undertake such planning activities. It should review plans to ensure they fit within the overall policies and context of the MOA. It should also monitor implementation of plans and evaluate their impacts.

Related to this objective, the next recommended steps for Ministry consideration include the following.

1. Review the functions of the Directorate of Planning and Follow up.

2. Strengthen the Agricultural Economic Department with additional staff, equipment and training.

3. Strengthen the Directorate's Planning, Monitoring and Evaluation Capacity.

4. Expand the Directorate's data collection, analysis and dissemination capabilities.

Objective 6. Disadvantaged Groups and the Re-Establishment of Rural Communities Are Supported by the MOA to Allow Subsistence Farmers to Take Advantage of Market Incentives for Agricultural Production.

MOA should attend to the special needs of those rural groups that are unable to respond to the new market forces that accompany private sector agriculture. These include those who are internally displaced; those in marginal conditions who have little or no investment stock; and those subsistence farmers whose income barely meets, or in some cases, is under their living expenses. In each case, the Ministry should consider special programs that meet the needs of these disadvantaged rural groups.

Many of the programs are provided by agencies and institutions that are outside of the Ministry. These include credit programs and special allotment packages provided by budgets from other ministries. However, the following programs could be sponsored by MOA:

- Farmer organizations such as farmer groups, societies, unions and cooperatives need to have a new legal base that is not directly under the responsibility of the Ministry. MOA could promote new laws and regulations that would allow rural communities and producers to organize and help themselves.

- Input supply credit, from private suppliers. MOA could assist in linking farmer organizations to bulk purchases of input supplies, promoting payment, or partial payment for the supplies at harvest.

- Mechanized land preparation and harvesting services credit. MOA could assist in linking farmer organizations to providers of custom services to allow agricultural to proceed before cash is available from harvest.

- Wheat seed treated against smut, either from the Ministry or provided by the private sector to increase yield and quality of small farmer wheat production.

- Promotion of community and rural development projects funded by external donors to build economic capacity in disadvantaged villages and communities.

In the new market systems, the Ministry has a responsibility to make certain that entire segments of the rural population do not fall behind. How to accomplish this should be an ongoing and sustained concern with MOA senior staff meeting and taking decisions that will benefit disadvantaged rural groups and communities.

Objective 7. Iraqi Public and Private Sector and International Partners Are Aware of Iraq's Agricultural Development Agenda, Its Benefits and the Roles of the MOA and the Private Sector in It.

One key MOA role is to keep its stakeholders informed of policy, regulatory and other changes which may affect them. Given the major and broad ramifications of the change to a market-led sector, the MOA must ensure that all its stakeholders are well-aware of the changes. The MOA needs to keep stakeholders informed of the potential impacts of changes, of their role in changes and of the Ministry's progress. This awareness-raising process will be critical to minimize unease with changes and to gain stakeholder support.

There are a range of stakeholders to be considered both within the Ministry and external to it. Within the Ministry, there are staff at all levels from the Minister to the field laborers at the agriculture section level. Externally, there are farmers, agribusiness and the public. As well, there are other partner Ministries including the Ministries of Water Resources and Trade. There are also international partners, including trading partners, research partners and regional partners (e.g., Gulf Cooperative Council). Deliberation by the MOA will be required as to what information is relevant to each group and as to what approach should be used in its dissemination

The following recommendations are put forward for Ministry consideration.

1. Undertake a stakeholder analysis to determine who needs to be kept appraised of sector developments. This stakeholder analysis should be accompanied by an information needs analysis.

2. Develop an awareness program that incorporates strategies to deliver information to all stakeholders identified in 1 above.

3. Implement the program.

4. Monitor and evaluate the program incorporating lessons learned.

ORGANIZATIONAL DEVELOPMENT PROCESS FOR PROGRAM REVIEW AND IMPROVEMENT

The Ministry of Agriculture is already doing many functions and activities that support a market-led agriculture economy. Its senior leadership is committed to strengthening the role of the Ministry in appropriate oversight, regulation, certification and in research and knowledge transmission, particularly extension. It is also committed to expanding the role of the private sector in agricultural input supply, production, processing and exporting.

Ceasing Ministry involvement in commercial activities and market interventions and expanding the role of the private sector in Iraq's agriculture will not be a neat and orderly process of simply providing a new organizational structure supported by new policies, procedures, additional resources and a training plan. Rather, it will be a dynamic (and sometimes untidy), ongoing "organizational development process" of multiple workshops and other activities at various levels within the organization and oftentimes with a range of other stakeholders—producers, other ministries, farmer organizations, universities, private companies and investors.

These workshops on one level will provide a "earning arena" for Iraqis to practice openness and transparency, to practice debating and consensus building. Sometimes, people have not had opportunities to learn how to debate and disagree over issues and actions without it becoming personal and emotional. Reaching collective agreement from groups of people on future actions, and knowing there is commitment to taking the actions, brings change. Agreement and commitment is much less difficult when there is an accepted process for interaction, and when people are comfortable with it.

A process of interaction that promotes openness and transparency also helps to encourage two-way communication vertically and horizontally. Ministry technical and administrative managers walk away from these kinds of planning sessions and workshops armed with "collective" products (products, such as recommendations, agreements, and action plans). They are clearer about what is expected of them and more confident in the decisions that they can take. Moreover, this kind of empowerment will enable ministry staff at headquarters and in the field offices to begin to define and take on new roles and responsibilities—which also help change attitudes—compatible with market-driven agriculture.

The current MOA organizational chart includes four councils and committees, one of which is the People's Affairs Committee[9] chaired by His Excellency the Minister. This committee meets monthly and is attended by over 50 representatives of the private sector and universities, as well as the MOA Director Generals and other senior ministry staff.

The four-hour committee meeting is introduced by the Minister as a "friendly consulting meeting" to discuss pressing problems faced by producers. It is a lively and participatory opportunity for public-private sector dialogue.

[9] This has also been referred to as the Social Committee.

As a point of departure for reviewing and strengthening the MOA Capacity Building Program, it is recommended this Committee be briefed on the Program and provided opportunity for contributing to its further development.

ANNEX 4

CAPACITY BUILDING WITHIN THE MINISTRY OF AGRICULTURE

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ATTACHMENT 1

VISION WORKSHOP REPORT:
MOA—ALREADY LOOKING INTO THE FUTURE

VISION WORKSHOP REPORT: MOA—ALREADY LOOKING INTO THE FUTURE

The senior staff of the Ministry of Agriculture have already voiced readiness to support the transition in Iraq to a market-led economy.

THE MOA VISION

In the ARDI-led January 14-15, 2004 Workshop on Setting Agriculture Objectives: The Role of the Ministry of Agriculture, the 50 most senior leaders of the Ministry of Agriculture—including the 13 Director Generals and key staff, and 15 Agricultural Directors of the Governorates—debated the future of agriculture in Iraq. It was an opportunity for collective strategic thinking that many present said they had not experienced before in the Ministry.

The 50 participants, the MOA senior management team, spent the afternoon of January 14 in six working groups exchanging reactions to 18 vision statements about the future of Agriculture in Iraq. These 18 statements, listed in the boxes below, were developed by 62 participants in four ARDI-led private sector roundtables held in December 2003 in Erbil, Sulaymaniyah, Baghdad and Hillah. All six working groups returned to the January 15 plenary session voicing strong agreement, using flipchart presentations, with the 18 vision statements.

Future Vision for Agriculture in Iraq

Overall

1. Market-led.
2. Provides significant employment opportunity and security.
3. Supported by government in partnership with the private sector.
4. Competes successfully on world markets.
5. Attracts local and foreign investors.
6. Supports national food security.

Farmers

7. Strive to increase the quality and quantity of their production in response to domestic and international demand.
8. Purchase agricultural inputs from a legal market and know how to use these inputs with modern techniques.
9. Are able to freely buy and sell land.
10. Are producing profitably with reduced subsidies.

Private Sector

11. Provides high quality inputs to the means of production for farmers.
12. Involved in processing and marketing of agricultural products domestically and internationally.
13. Invests in high quality processing facilities.
14. Develops specialty expertise.

Ministry of Agriculture

15. Assists farmers with relevant research, extension and demonstrations.
16. Provides support to gain access to resources, modern techniques and new markets.
17. Will transfer the responsibility for input supply and commercial production to the private sector.

Consumers

18. Have access to high quality, safe and competitively priced local and imported agricultural products.

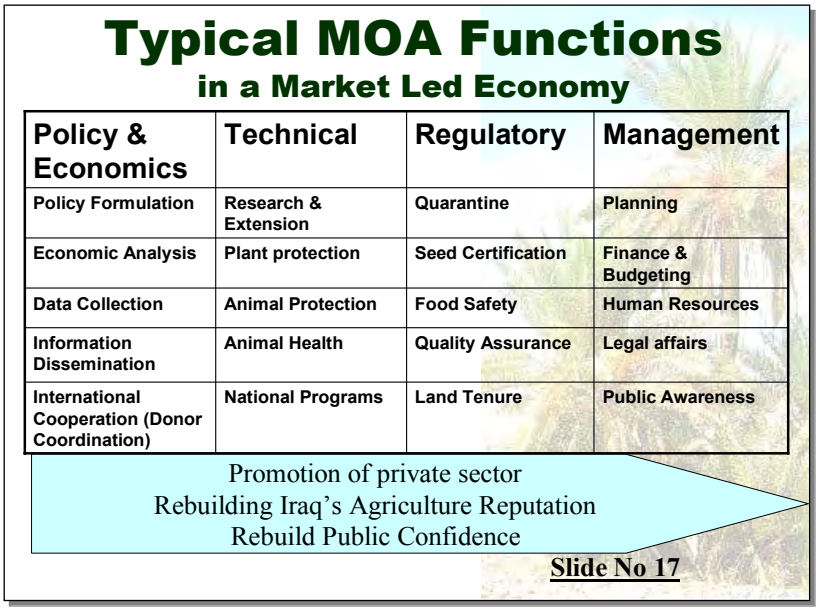
Developed in four private sector roundtables held in December 2003 in Baghdad, Hilla, Erbil and Sulaymanyah.

The only concerns were directed at two vision statements:

- Vision Statement 9. The buying and selling of land should be preceded by tenure regulations concerning a) government lands that have investments by the private sector and b) unused lands.

- Vision Statement 17. There should be a suitable timetable to transfer responsibility to the private sector, and not an immediate transition.

During their working group deliberations, the 50 senior leaders of the MOA also exchanged reactions to the final slide in the ARDI power point presentation. This slide, Typical MOA Functions in at Market-Led Economy, is shown below. They reported back to the plenary session their understanding of the four typical function areas and their agreement that at some future point, the MOA in Iraq would need to have full capability in each of the function areas identified in the chart.



Overall workshop outcomes included the expressed commitment of the MOA senior staff (i.e., the working groups' flipchart presentations) to:

- Support the transition in Iraq to a market-led economy;
- Expand over time the role of the private sector in input supply and in buying, processing and exporting of agricultural products—that is, shift from state-dominated to private sector-led production and allocation decisions; and
- Help assure that the MOA plays a central role in building a market-led agricultural economy in Iraq by strengthening some key existing functions, adding some new and critical functions, and transitioning out of some current functions, i.e., commercial activities.

The workshop proceedings (English and Arabic) have been distributed to workshop participants and are available from ARDI.

DEFINING THE NEW MOA MISSION, GOALS AND PROGRAM

Cessation over time of MOA involvement in commercial activities will run parallel to efforts by the Ministry to define the new MOA—its mission, goals, functions and programs—in support of market-driven agriculture. The January Vision Workshop was an important starting point in beginning to redefine the Ministry mission, goals and program. Building a shared vision in a complex change program provides a road map for focused action. It helps to clarify and define:

- What the Ministry and sector will "look like" in market-led agricultural economy;
- How implementation should happen to assure an effective and minimally disruptive transition;
- What the new roles and responsibilities will be for central ministry and governorate staff after the transition; and
- What the relationships will look like between these ministry officials and private companies, farmer organizations and farmers once transition to market-driven agriculture is complete.

Building this shared vision will require lots of exchange of ideas and perspectives, lots of listening and understanding. This will need all need to occur within the context of what is best for the citizens of Iraq.

At the conclusion of the January 14-15 Workshop, the MOA senior management team recommended that follow-up workshops be held in each function and sector area and in each governorate. They recommended follow-up workshops be held to develop plans of action in support of the transition to a market-led economy, with key stakeholders in attendance.

These recommendations, as initial steps, are the right ones. Implementing these steps will begin to build a broad base of support for change. Specifically, they would include the following:

- A program of organizational development (OD) interventions. This would include, for example: workshops, seminars, policy working groups, organizational inventories, department-specific staff profiling, new job descriptions, training programs, and early retirement programs. These would all be designed to begin the process of realigning and retooling MOA staff currently involved in commercial activities; of adding new functions; and of strengthening existing functions.

- A series of program development interventions by sector and with senior and mid-level HQ and governorate staff (and in some cases producers and other stakeholders) to identify "customer" needs. As well, the activities to meet these needs would need to be identified. Further; new knowledge and skill requirements by MOA (HQ and field) to implement these activities; and the expectations of staff performance—actions and behaviors—to support market-driven agriculture would be articulated.

- A stakeholder awareness program (e.g., regional stakeholder workshops with producers, farmer groups, private sector, and MOA governorate staff) to increase understanding of the new role of the MOA and the private sector in agricultural development in Iraq, and to build new linkages within and across stakeholder groups in support of market-driven agriculture.

ATTACHMENT 2

APPROACH TO MOA
CAPACITY BUILDING PROGRAM DEVELOPMENT

APPROACH TO MOA
CAPACITY BUILDING PROGRAM DEVELOPMENT

The main elements of the approach taken by ARDI to develop the capacity building program include:

SCOPE OF CAPACITY BUILDING

Capacity building considers all factors that enable the MOA to fulfill its functions. This includes: staff skills, systems, finance, policy and regulations. For example, the MOA may build the technical capacity to undertake all its functions but not have the financial capacity to carry them out. Often capacity building programs focus on skill and system development needs without looking at other capacity enablers such as supporting policies and regulations and access to operating finance.

PARTNERING WITH MOA

The ARDI approach is to ensure that this activity is undertaken in partnership with MOA. ARDI recognizes the strength of the existing capabilities within the MOA and the value of the knowledge and experience MOA staff bring to this task. A team from the Directorate of Planning and Follow up closely collaborated with ARDI advisers. This team consisted of Abdul Aziz Fatah Al-Karagolly - Director General, Dr. Abdul-Hussein Noori Al-Hakeem - Head of the Department of Agricultural Economics, Dr. Mohammed Saad - Head of the Department of Strategic Studies, Dr. Amaad Mohammed Abdul Rachman - Strategic Planning Specialist and Dr. Nabil Alnouri - Agricultural Marketing Specialist.

LISTENING TO STAKEHOLDERS

ARDI recognizes that the greatest base of knowledge about what needs to be done to rebuild the agricultural sector in Iraq, rests with Iraqis themselves. Ministry personnel, private sector agribusiness and farmers have the greatest knowledge of the issues that need to be addressed, how they should be addressed in the Iraqi context and who are the most appropriate to undertake the necessary activities. They are also critical to providing guidance about realistic timeframes for achievement of outcome and change. ARDI surveyed a considerable number of stakeholders through round table conferences, workshops and direct interviews so it was able to field the views of as many stakeholders as practically possible within the timeframe of the study. ARDI consulting staff contribute to this local knowledge-base via extensive experience in undertaking similar activities within the region and in other parts of the world.

UNDERSTANDING THE CURRENT SITUATION

ARDI understands that the situation in Iraq is dynamic. The government, including the MOA, is in transition to taking full responsibility from the CPA in July. It is also a period of some insecurity which limits the ability of all stakeholders to operate normally. It is a period of significant change from over 30 years of dictatorship, central government control and isolation from the rest of the world. Iraqi families have suffered through many years of conflict. ARDI is sensitive to these factors and will work with the MOA, the private sector and farmers to determine the most appropriate approaches to development given these factors.

SENSITIVE TO CULTURAL AND GENDER CONSIDERATIONS

Iraqi people have a rich culture, one that needs to be respected by others and that needs to be taken into account in approaches to development and implementation methodologies. ARDI will be guided by its counterparts on the most appropriate way to ensure cultural considerations are integrated into methodologies adopted and in the formulation of the program of support. AARDI will ensure that the interests of both men and women are considered.

ACCOUNTING FOR DONORS ACTIVE IN THE SECTOR

ARDI is conscious that there are a number of donors active in the sector. These donors will be consulted where possible to ensure their views and planned support programs are considered in the formulation of any program of support.

SEEKING SUPPORT OF MOA

An initial task was to brief senior MOA staff on the objectives of the program development activity and how it builds on the previous project activities, principally the round table conference and vision workshop in December and January. ARDI briefed both His Excellency Minister Dr. Al Abood and Deputy Minister Dr. A. M. Al-Sherify. The collaboration with MOA staff, fully supported by Dr. Al Sherify, was close and resulted in obtaining a great deal of information in a short time.

ATTACHMENT 3

MOA PROFILES

MOA PROFILES

STATE BOARD FOR AGRICULTURAL RESEARCH

Function

The State Board for Agricultural Research aims at (a) developing agricultural production and improving its quality through deriving high-productivity, good quality, disease and environment resisting species, and also high productivity and good quality animal breeds, and (b) finding essential alternatives for raw material, plant and animal, through investigations and research.

Organizational Structure

The organization consists of the following departments:

- Director General Office
- Field Crops Research Department
- Soils Research Department
- Plant Protection Department
- Animal Resources Department
- Rainfall Plantation Research Department
- Planning and Follow up Department
- Scientific Documentation Department
- Administration and Finance Affairs Department
- Expert Systems

The State Board is headed by the Director General. This position is supported by a Deputy Director General. Together these two positions oversee the operations of the departments. Each department is headed by a Director who reports to the Director General. The State Board has eight Experiment Stations. These are located in Kirkuk, Ramadi, Wassit, Baghdad, Abu Ghraib, Basra, Tikrit and Mosul. Each Experimental Station has a Director who reports to the Planning and Follow-up Department within this State Board.

A number of Departments have related laboratories. For example, Plant Protection has Nematology, Plant Pathology, Entomology including Cereal, Insect and Pesticide Analysis. Soil Research has labs for Salinity, Micro-Nutrients, Chemical Analysis, Physical Analysis and Micro-Organisms.

As the name states, the principle responsibility of Departments relates to research. For instance, the Plant Protection Department undertakes research related to plant protection issues. They provide support to the State Board of Plant Protection on technical matters and assist in the production of technical literature. They have a close relationship with the Ministry of Higher Education, in particular the Faculties of Agriculture.

Staff are located in Baghdad and in the governorates. There are about 350 staff in total.

Issues

Nexus between Research and Extension

They are aware of the criticism that there are weak linkages between research and extension and ultimately with the farmer. The DG considers that extension services have been run down. Low salaries have forced many experienced staff into the private sector. Training of staff has been poor. There is a need to bring new officers into the service. The DG considers that many of the state programs which blend research and extension are examples of good practice that can be applied to the main boards of research and extension.

Buildings Damaged

Many Board facilities have been destroyed, being ransacked and looted after the war. Many buildings were damaged. There have been reports that people tried to sell bricks from buildings. However, the Ministry has begun the renovation process.

Need for New Equipment

Equipment from all of the laboratories and other facilities has been looted. This equipment needs to be replaced. A list of items needed to re-equip the laboratories has been prepared and the MOA is seeking Donor support.

Lack of Qualified Personnel

The sanctions proved devastating to Iraq. It had wide ranging impacts including making living so difficult that many senior qualified staff left for opportunities outside Iraq. In 1981 there were 80 Ph.D. staff, 120 M.Sc. staff and 400 B.Sc. staff. In 2004, this had decreased significantly to 16 Ph.D. staff, 31 M.Sc. staff and 100 B.Sc. staff. Many of the staff who left, had studied and received their degrees in the USA, UK, France or Germany.

Lack of Modern Research Methods

Iraqi's have been cut-off from the rest of the world. They were forbidden to travel outside to attend conferences. They had no financial support to maintain their international linkages. They were not even allowed to use the internet. As such, many researchers have not been able to keep abreast of innovations in science and research.

Lack of Technical and Research Knowledge Base

As for research methods, Iraqis could not travel. They could not easily liaise with their colleagues overseas due to paranoia from the Ba'ath Party about security issues. This resulted in a breakdown of networks with international scientific and/or research institutions such as IRRI, ICARDA, FAO, CSIRO and AAAID. There have been initial attempts to rebuild some of these institutional links. The State Company has initiated some cooperative programs with AAAID in plant protection, field crops, animal husbandry, soil and expert systems.

The Library at Abu Ghraib Has Been Completely Looted

The Research Board needs to rebuild their resources of books and journals through re-establishment of subscriptions. A new internet center has been established as well as a Department who will establish an expert system to capture and more easily disseminate technical materials within the research centers.

Damage to Critical Reference Bases

The looting and destruction of research facilities was comprehensive. It included the destruction of key reference resources such as the gene bank, the entomology collection and the herbarium which contained species collected over the past 80 years.

Details

On December 4, 2003, in a meeting with the 13 Director Generals of the Ministry of Agriculture, the DG for Agricultural Research, Dr. Zohair Stephan, stated that science and research is the foundation for the long-term viability of the agriculture sector in Iraq and that this foundation experienced a "massive earthquake" with the war. Iraq's substantial and international class agricultural research talent, he said, is without laboratories or equipment to conduct research.

The Deputy Minister of Agriculture, Dr. Sawsan A. M. Al-Sherify, described Iraq's research capability before the war at 70 percent of what it needed to be, but at 0 percent now.

But it is not just the facilities, the valuable scientific equipment, and the tools and glassware required to conduct research that were destroyed, the life work of people was also destroyed—the field crops gene bank, the arboretum, the museum of thousands of classified insect species going back to 1930, the research library, and the list goes on.

The State Board of Research is being rebuilt but this will be a costly and time-consuming endeavor. The State Board of Research has four departments—Soils, Field Crops, Plant Protection and Animal Husbandry. The Poultry Department was removed from the State Board under the last regime, but is now in the process of being transferred back. The State Board has a total staff of 345 employees located at the main offices and laboratories in Abu Ghraib and in its

research stations around the country. It has two animal husbandry stations in Mosul and Baghdad. It has research stations for soils, plant protection and field crops in Basrah, Kirkuk, Anbar, El Wada (soil), Mosul, Talafa (rainfed), Salah al Din and two field crop stations in Wassit. Field crop research primarily includes wheat, barley, maize, sorghum (as feed for poultry), rice, green gram, broad beans, lentils, chick peas and peanuts.

The main research center is located in Abu Ghraib and the visit to this center was shocking: only the shells of the rows of buildings are still standing. Everything else was either looted or sabotaged, with even the floor tiles ripped-up. Valuable scientific equipment was smashed or stolen. Piles of broken glass beakers, test tubes and other glassware were lying everywhere. The library, established in 1922, was burned totally. All their genotypes were also destroyed. But most sadly, the Middle East's second largest insect museum, dating to 1930, and with thousands of catalogued insect species also was totally destroyed. Scientists from all over the region visited this museum over a seventy-year period, including scientists from Israel. Several scientists said that they could not go visit the destroyed center for two to three months after it happened, feeling that their life work had been lost.

But now they say they have begun to focus on the future. For example, they have begun traveling to various parts of Iraq (e.g., to northern Iraq to collect wheat and barley seed from farmers) to begin rebuilding their banks of genetic varieties. They also have started field trials for salinity and drought resistance, because the basic input is labor and knowledge (but one scientist said they didn't even have cylinder measures to take with them). They are unclear about the 2004 budget. They believe that even the top Ministry officials are also probably unclear about it. They are hoping they will be able to begin rebuilding at least their basic labs in 2004.

They are expecting 180 Ph.D. and M.Sc. staff and technicians to be transferred to the Ministry of Agriculture shortly. Many of these will transfer to the State Board for Agricultural Research. They will come from the IPA Agricultural Research Center (the Presidential Institute for Agriculture, which was attached directly to the leadership of the last regime, and considered the most qualified scientist in the country). This coming expertise is seen as a great plus by the State Board. Their plan is to base the Ph.D. and M.Sc. staff at the main research center in Abu Ghraib, and base the technicians out in the nine larger research stations around the country.

Two important issues emerged in discussions with research scientists:

- In the 1960s and 70s, research and extension were part of one board. Extension was reportedly stronger then than now. For various reasons, the extension services are technically weak and the Ministry created the national development programs as a way to help integrate research and extension behind specific commodities.

- Integration of research facilities: Up to 1968 most research activities were integrated under the Commission for Research and Agricultural Projects, then re-organized into other organizations, and then in 1983 put under one state board. In 1993, they were again separated into the State Board for Horticulture and Forestry and State Board for Agricultural Research. Thus, a situation was created where the research apparently did not improve, with the separate funding and resources, and where less resulted because of the separation.

STATE BOARD FOR EXTENSION AND AGRICULTURAL COOPERATION

Function

To develop the knowledge and skills of farmers and encouraging them to use scientific means in agricultural work in such a way that can improve production level and quality by employing extension and development programs for farmers and people working in the agricultural sector, in addition to developing the cooperative movement in the country.[1]

Organizational Structure

The organization is headed by a Director General who is assisted by an Assistant Director General. There are seven Divisions as follows:

1. Department of Specialized Extension. The Department has five divisions. These are Crops, Animals, Soil and Water, Environment and Rural Women's Development. The latter has been suspended for the time being. The former departments implement extension programs in the named areas.

2. Department of Extension Program Support (Media). This Department deals with media support for extension, including for example, radio, television and publications. Although the Department has a television studio, their camera equipment was looted and they are unable to produce programs for television. They currently are outsourcing production of some of their information brochures as their colored printer also has been damaged.

3. Department of Human Resource Development. This is the training department which provides training for Department staff and farmers. The six Agriculture Training Centers fall under the supervision and direction of this Department. The Department has outlined its farmer training activities for 2004.

4. Department of Agriculture Cooperation. The work of this Department has been suspended until further notice. Previously, the Department, in collaboration with the "Farmers Union", supervised the agriculture cooperatives. In 2002, the government transferred the entire responsibility for cooperatives to the Union. However, while this transfer occurred on paper, it purportedly did not occur in practice. The Department no longer has responsibility for the agriculture cooperatives. It is not clear who does. There are at least two Farmer Unions who claim leadership, one group who purportedly wants to work with the Department and another who do not.

5. Department of Planning and Follow Up.

[1] While this is the formal statement of the State Board's function, the situation has changed and responsibility for agricultural cooperatives no longer resides with the Board.

6. Department of Administration and Finance.

7. Department of Internal Control.

Agriculture Training Centers are co-located with MOA facilities in the following six Governorates: Baghdad, Ninewa, Qadissiya, Tameem, Wassit and Basrah. While located at the governorate-level, these Centers report directly to the central State Board. Each Training Center is overviewed by a Manager and consists of technical staff, drivers and laborers. Additionally, the State Board has technical responsibility for the 15 governorate-level Agriculture Extension Sections located in the governorate-level Directorate of Agriculture and responsible to the governorate-level Director of Agriculture.

The State Board has around 200 staff. Approximately 50 more staff work in the Governorates.

Finance

The Board is fully financed by the Government.

Issues

Equipment Needs. Much of the equipment used by the extension personnel was looted during and immediately following the war. The media department, training department and agriculture training centers need to re-equipped and made operational.

Expansion in Number of Agriculture Training Centers. The State Board plans to expand the network of training centers from 6 to 15 resulting in centers in all Governorates.

Training of Extension Workers. Like many Iraqi agricultural professional, Iraq's extension workers have been alienated from the rest of the world and as such from technical innovations and extension methodologies. Like their colleagues in other agricultural fields, they need to renew and further develop their knowledge of technical innovations as well as training and extension methods.

*Production of Extension Materials.*The capacity to develop practical, useable educational materials is very limited. Extension workers need access to up to date extension materials for use with and dissemination to their client farmers.

Networking of Extension and Development of Expert Systems. The State Board has a plan to network all extension stations and provide them with internet access. They also plan to develop an expert system which will provide extension workers with a valuable information base that they can call on to assist farmers. The existence of the network will enable extension workers to seek feedback from the technical and management resources available at headquarters

in Baghdad. It will also enable them to communicate with their colleagues in other parts of Iraq and around the world.

Details

Linkages Between Research and Extension. MOA researchers report they carry-out applied research trials directly with farmers. If extension field agents were more involved in the research process, there could be greater impact on food and many more farmers across Iraq would benefit with increased yields and incomes. As with many research and extension systems around the world, there are significant, deeply-imbedded problems with research and extension linkages. These are likely to require some restructuring of the research/extension functions and retooling and redeploying some research and extension staff.

History of Extension Services. According to senior extension service staff, up to the 1970's the extension services were considered strong. Extension programs were directed at rural youth, women and men. Even as recent as 1987, extension was still seen as providing strong programs in farmer training, field extension and support to cooperative societies.

In 1987, the Ministries of Agriculture and Irrigation were combined and the extension program was largely dissolved. Its mandate laws limited to mass media such as 10-15 minute daily radio spots; twice-weekly 10-15 minute television programs and magazines. Direct field extension to farmers reportedly ended. By 1990, extension was diminished even more when it was re-organized as a department in the State Board of Agricultural Services. Staff, budget, and program activities were greatly reduced. Most of the better technical extension specialists left the service because of low salaries, leaving behind a technically weak department.

In 1993, the Ministry was separated into the Ministry of Agriculture and the Ministry of Water Resources. In 1995, a new State Board of Extension and Agricultural Cooperatives was formed. This is the current structure to date. Training activities became one of the main activities, along with continued reliance on mass media to get extension messages to farmers. Six training centers were built. The main training center for the Ministry was established at Abu Ghraib. It is currently being renovated. Six other training centers were established at Anbar, Ninewa; Qadissiya; Wassit; Tameem and Basrah. Each center serves more than one governorate. All six center were damaged or looted during and after the war in 2003, but are in the process of being rehabilitated. Completion of all six centers is expected in March 2004. Also in 1995, as part of a new mandate, the State Board once again started doing some field demonstrations and field days.

The proposed 2004 farmer training program includes 223 two-day training sessions across the six centers. This targets a total of 3345 farmers. But these training programs are only directed at men as programs directed at women and youth were discontinued in the 1970s.

Staff

The current staff includes 139 employees at the State Board HQ in Abu Ghraib and ten employees at each of the six training centers. This indicates a total of around 200 employees. The current staff of around 200 represent a very small percentage of all Ministry staff, reportedly 6000 in total. The Deputy Director of the State Board, now seven years in this position, is a Ph.D. candidate in Extension and a strong advocate of a re-invented extension program. He suggests a stronger, more central role in the Ministry for Extension and a campaign to re-build its positive image of the past. This latter would include efforts with the Faculties of Agriculture to also improve the image of their Extension Departments. The Extension Department of the Faculty of Agriculture is seen as the last choice of new students enrolling in the Faculty of Agriculture, according to senior MOA staff and staff of the Faculty of Agriculture in Abu Ghraib.

The State Board for Extension also has technical supervision over approximately 20 extension specialists in each of the 15 governorates (not including the three governorates in the north). Motivation of these governorate extension staff is described as low. They are described as "generally qualified with good experience" and "satisfied with the recent salary increases" but are "old in age" and "old in the job."

The agricultural cooperatives function of the State Board for Extension and Agricultural Cooperatives is in suspension, with no current mandate and program. The 882 cooperative societies in 15 governorates were established under Law #43 of 1977, but with Law #56 in December 2001 they were placed under the responsibility of a new umbrella of Farmer Unions. Law #56 was described as "not properly implemented," according to extension staff, and since the war, the farmer union has not been connected to any authority. The intention of the Law #56, extension staff believe, was as follows: To make the societies independent, with member-elected Board of Directors, and self-financing. The MOA is now only loosely connected to the societies and the status of these societies is not at all clear.

STATE BOARD FOR SEED TESTING AND CERTIFICATION

Function

The main objective of this State Board is to control and evaluate the quality of locally produced and imported seeds on the basis of international tests and specifications. It is responsible for protecting against the decline or loss of varieties and ensuring high quality seed for agricultural use is available and accessible to farmers.

Organizational Structure

The Board is headed by a Director General. It has the following offices.

- Director General's Office
- Plants Departments
- Laboratories Department
- Field Inspection Department
- Certification Department
- Planning and Follow up Department
- Administration and Finance Affairs Department
- Internal Control Department
- Four Departments located in Wassit, Najaf, Basrah and Salah al- Din Governorates.

The Board employs around 160 permanent staff in Baghdad and the Governorates. In addition, there are around 240 additional contract staff.

Issues

Facilities at Abu Ghraib. Work has progressed on the rebuilding of existing facilities at Abu Ghraib. While some basic laboratory equipment has been purchased, a considerable amount of equipment is still required. Much of this equipment is not available in the local market. Locally available equipment is typically second hand and expensive. As important, it is difficult to assess the extent of previous use of the equipment. The gene bank will need considerable investment. The head of the gene bank was able to save some of the most precious materials.

Damage to Botanic Gardens. The State Board is also responsible for a Botanic garden at Zafraniyah and one in Mosul. The latter is 1200 donums and an important source of genetic material. Both botanic gardens were damaged by conflict and looting. These significant resources must be rebuilt.

Program Information. Major seed crops include wheat, barley, rice, potatoes and maize. The Board contracts with different companies who are responsible for supplying seed. The Board also certifies farmers to grow seed. Currently, there are over 4000 farmers certified to grow seed. The State Board arranges monitoring and inspection of these certified growers.

STATE BOARD FOR AGRICULTURAL LAND

Meetings were held with the Director General, Department Agricultural Engineer, Director of Lands Department and Director of Land Distributions.

Function

1. *Registration of individual rights for all agricultural lands on the basis of administrative units in the governorate and at all districts and blocks.*

2. *To determine and distinguish between the rights of the individuals and the rights of the State.*

3. *Registration of Individuals rights in terms of orchards and following up matters in the real estate registration offices.*

4. *Distribution of government agricultural lands owned by the State to farmers according to government laws and to register their rights.*

5. *Document and register inherited rights.*

6. *Rent out agricultural lands owned by the government to individuals and the private sector and follow up on their contractual commitments.*

7. *Re-organizing agricultural lands after reclamation and registering owner's rights.*

8. *Allocating lands for state projects, registering them and follow up.*

9. *Giving legal opinion in state courts concerning disputes between individuals and the State.*
10. *Monitor payments associated with rented State lands.*

11. *Conservation of historical sites in accord with existing laws concerned.*

Organizational Structure

The State Board of Agricultural Lands is headed by a Director General. The Board consists of the following departments.

- Planting and Fixation Department
- Distribution Department
- Allocation and Land Investment
- Land Allocation for Medal-holders Department
- Confiscation and Settlement (pay back) Department
- Record Department
- Technical Affairs Department
- Planning and Follow up Department
- Administration and Financial Affairs Department
- Independent divisions that are directly connected to the Director General are:
  A. Confidential Bureau
  B. Legal Division
  C. Microfilm Division

- Agricultural Lands Departments in Governorates

The staffing levels at the head office in Baghdad total around 120. Lands officers are also located in each Kadha and at each Nhia. These are administrative units used in Iraq. Lands officers, at the governorate-level, are technically responsible to the State Board but are managed and administered by the governorate.

Issues

Destruction/Quality of Records. Most of the records held by this office were destroyed following the looting that occurred after April 2003. Many of them were burned. The State Board now needs to reconstruct these records. They will be able to source data from several sources including: the Division of Lands at each governorate, State Board of Surveying, agriculture sections within each administrative unit, Court for Agricultural Lands within the Ministry of Justice and offices of real estate registration in all governorates.

There appears to be a reasonably comprehensive system of land registration. However, it is not easily accessed given the looting and destruction that occurred. Those records of land registration that do exist are either paper based or on 16 microfilm. The paper-based records are in poor condition. There is no microfilm reader to examine the quality of microfilm records.

The Need for New Equipment. The damage caused to the premises following the war included the looting of much of the equipment used by the Directorate. Some equipment has been re-supplied, such as computers and a photocopier. However, the need for additional equipment is urgent.

Knowledge Gap. Like their colleagues in other sections of the Ministry, the staff of Lands have not been able to travel outside the country for many years. Therefore, there is a lack of awareness of the modern trends in their industry and of new approaches and associated technologies that are currently being applied by their colleagues in other countries to fulfill similar responsibilities. Staff need to have the opportunity to interact with their counterparts overseas to discuss their current situation and possible solutions. From such experiences, and associated consideration of their development strategy, will emerge knowledge as well as equipment and training needs.

Laws and Regulations

There are a number of different types of land categories including the following.

- Land owned by the Government;

- Land owned by private individuals;

- Land owned by the Government but with special rights to be used by farmers; (The government redistributed approximately 8 million donums to farmers. Farmers do not own the land, but they can use it as long as they continue to do so properly. This land can also be passed down to family members, again as long as it is used properly.).

- Land owned by the Government but which is leased to farmers and

- Land controlled by religious authorities.

Farmers cannot sell their land if it is "redistributed land" or leased land. These land categories constitute a significant proportion of agricultural land and the current policies limit the land from being sold or consolidated into larger and possibly more cost efficient farm sizes. The Board has made submissions to the MOA to change these rules and allow privatization of leased and "redistributed" lands.

There are other laws and regulations currently in existence which are not applicable in a post Saddam era and/or which would not promote private sector involvement in agriculture. The State Board has made a series of recommendations concerning these outdated laws and regulations.

Repatriation of Lands Distributed By Saddam. There are over 1 million donums of land that were confiscated and subsequently given to Saddam cronies. The Directorate needs to initiate strategies to ensure these lands are repatriated to rightful owners.

STATE VETERINARY COMPANY

Function

To protect animal wealth from epidemics and exotic diseases through veterinary activities, such as vaccination and treatment campaign against most endemic diseases, and those which have a public health hazard including meat inspection.

Organizational Structure

The Company has the following divisions.

- A General Directorate based in Baghdad.
- A central veterinary hospital in each of the 15 governorates.
- Additional hospital in Baghdad.
- 210 veterinary clinics across the 15 governorates.
- 5 main veterinary laboratories located in Baghdad.
- Veterinary Central Diagnostic Laboratory.
- Quality Control Laboratory.
- FMD Vaccine Production Laboratory.

- Brucella Production Laboratory.
- Rinder-Pest and PPR Control Laboratory.
- The Company has around 2,400 staff.

Locations

Available information on the location of hospitals and clinics and their condition follows.

Directorate	Centre	Buildings	Comment
Baghdad	Wazeriah		
Baghdad		Hospital	
Baghdad	Kadhumia	Hospital	
Diyala	Ba'aqubah	Hospital	Mild damage, infrastructure intact
		Clinics	
Anbar	Ramadi	Hospital	Mild damage, infrastructure intact
		Clinics	
Wassit	Kut	Hospital	Mild damage, infrastructure intact
		Clinics	
Najaf	Kufa	Hospital	Mild damage, infrastructure intact
		Clinics	
Babylon	Hillah	Hospital	Mild damage, infrastructure intact
		Clinics	
Qadissiya	Diwaniyah	Hospital	
		Clinics	
Thi-Qar	Nasiriyah	Hospital	
		Clinics	
Muthanna	Samawah	Hospital	Central hospital destroyed
		Clinics	Two clinics damaged
Missan	Amarah	Hospital	Hospital completely looted
		Clinics	Most clinics destroyed
Basrah	Basrah	Hospital	Completely Looted
		Clinics	Clinics destroyed
Salah al-Din	Tikrit	Hospital	Hospital looted
		Clinics	
Tameem	Kirkuk	Hospital	Hospital damaged
		Clinics	Two clinics damaged (ARDI currently assisting)
Kerbala	Kerbala	Hospital	
		Clinics	
Ninewa	Tlousle	Hospital	Mild damage, infrastructure intact

In addition to the government clinics, there are around 2,000 private sector veterinary clinics throughout the country.

Issues

The State Company charges producers a small fee for most livestock vaccines, but no fee for services. The Company gives farmer's limited capacity to pay as the reason for the no fee for service. Four vaccinations are provided free of charge. These are FMD, anthrax, render pest and intratoxemia. Poultry vaccines are subsidized. Some poultry farmers have sufficient experience to carry-out their own vaccination program.

Details

Restocking Veterinary Medicines and Vaccines. Although veterinary medicines and vaccines have been recently received under the OFF program, Ministry officials say that outbreaks of foot and mouth disease are occurring in cattle and sheep, as are cases of anthrax and other diseases. A major concern of the Ministry is that they are currently seeing little or no reproductive activities in sheep and goats. Breeders cannot risk bringing in new animals. Because of direct mortality from disease and reduced reproductive activities, these assets are beginning to decline rapidly, according to Ministry officials, thereby reducing meat and milk production, and also reducing farm incomes.

A similar story concerns poultry. Without critically needed poultry medicines for Newcastle and other diseases, the Ministry says they expect direct mortality of poultry of over 50 percent and in some areas up to 100 percent.

Ministry officials cite an immediate need for FMD vaccines for cattle and sheep. As well, there is need for 1000 inoculation guns and poultry medicines against Newcastle and other diseases. They also need refrigerated trucks to store and transport vaccines.

Re-Building Quarantine Testing Laboratories. Currently, there are no testing laboratories at border-crossings for imported animals, meats and vegetables. Iraq's current situation of open borders, Ministry officials say, makes the country extremely vulnerable to outside plant and animal diseases and pests. They are also extremely concerned about risks to public health, in that expired products are coming into the country unchecked and relabeled with new expiration dates. Much of the frozen beef entering the country, for example, is coming from India. But, little is known, officials say, about the standards of preparation and especially if preparation is according to requirements under Islam.

Testing laboratories at all border crossings are critical to strengthen food safety and security in the country, and protect Iraq from outside plant and animal diseases and pests. Two new border crossings, Iran and Kuwait, will need new facilities.

Private Sector Role in Epidemics Prevention. During the national campaigns to prevent epidemics, MOA veterinarians reach approximately 60 percent of livestock producers, according to senior MOA officials. Iraq has more private veterinarians than MOA veterinarians. The private veterinarians have private practices or they are employed by large livestock and poultry producers. There are also an estimated 7000 veterinarians without jobs, all graduates of the seven veterinarian schools in Iraq. These schools are located in Baghdad, Basrah, Mosul, Diwaniyah, Nasiriyah (2) and Babylon. Many of these 7000 graduates without jobs spent the last 13 or more years in the military and, as two MOA veterinarians put it, "they lost their skills and took other jobs like driving taxis."

The Ministry as a pubic service will need to continue to take the lead in the prevention of epidemics in cattle, sheep and poultry, especially by producing quality vaccines. The role of the private sector should be rapidly expanded in the inoculation campaigns, and most farmers should pay for the vaccines and the services. By the end of 2005, private veterinarians should be providing at least 80% coverage to livestock and poultry producers in national campaigns to prevent epidemics, and charging producers full costs for their vaccines and services. The MOA will need to launch a public awareness program directed at livestock and poultry producers to increase understanding of the new role of the MOA and private veterinarians in the national campaigns for disease prevention in livestock and poultry.

Diseases Endemic to Iraq

The major diseases currently endemic to Iraq are:

- Foot and Mouth
- P.P.R.
- Sheep and goat pox
- Rabies
- Screw worm
- Brucellosis
- Black quarter
- Hemorrhagic Septicemia
- Blood parasites
- Canine arthritis/encephalitis
- Epizootic lymphangitis
- Glanders
- Mycoplasmosis
- Newcastle disease in poultry
- Gumboro disease
- Mareks disease
- Pullorum disease
- Fowl cholera
- *Salmonella enteritidis* and *S. Typhimurium*
- Varrosasis

- European fowl blood
- American fowl blood
- Echinococcosis

STATE HORTICULTURE AND FORESTRY

Function

- *To re-establish the orchards (e.g., date palms, citrus, etc.) to meet demands of farmers.*

- *To distribute a range of varieties to farmers including seedlings of fruit trees and ornamentals and date palm offshoots.*

- *Reforestation and rehabilitation of tree nurseries.*

Organizational Structure

The proposed Ministry reorganization shows this company becoming a State Board. It currently has 773 employees. Of these, 476 are permanent staff and 297 are seasonal or contract employees.

The senior managers of the Department say they do not wish to convert back to a self-financing entity. They also advise that farmers will have access to vegetable seeds and seedlings from the private sector.

Finance

This State Company describes the 2004 budget as follows:

The increased salaries that the CPA put into place were important and reassuring for them. The main CPA 2004 budget will help with the rehabilitation work with the stations around the country. They estimate that only 10 percent will be available to re-activate programs. For example, the olive tree project (large plantations, drip irrigation, etc.) will require 300 million dinar to re-activate the project (pumps were stolen which stopped the drip irrigation and killed the trees), but the 2004 budget will only provide approximately 37 million dinar (see more on this project below).

They are looking for donors for this and other projects, especially in forestry and tissue culture.[2]

Details

The **Department of Horticulture**, prior to the 2003 war, had nine horticulture stations throughout the country. These were in Anbar, Kerbala, Babylon, Diyala, Kirkuk, Baghdad, Wassit, and two stations in Mosul. Before the war, the main activities of these stations were to propagate fruit and ornamental seedlings and maintain mother orchards. Some stations also propagate commercial varieties of vegetables including eggplant, tomatoes, cucumber and cauliflower. There were a total of 30 donums of 140 plastic greenhouses (500 square meters each).

In 2001, The Department of Horticulture brought in different varieties of potato seed from Belgium in a project based in Mosul and in Kirkuk to provide certified seed to farmers. 2000 tons of certified potato seeds were produced and provided to farmers in 2001-02. All of these activities have stopped since the 2003 war. Seven stations were totally destroyed/looted. The Mosul and Kirkuk stations sustained only limited damage.
The private commercial market is reportedly getting stronger. It is providing good quality seeds and seedlings, including hybrids. They describe these commercial activities as directed by wealthy Iraqis who have contacted and now represent international companies. They do not have data on these entrepreneurs: who they are, who they represent and what are they bringing in. But they see this information as very important since this State Board is responsible for certification. They believe that farmers rely on the government for many of these inputs and farmers have confidence in the government.

The **Department of Research and Studies** before the war conducted research in four activity areas: fruit/foods; vegetables (including potatoes); forestry; and tissue culture. It has five research stations around the country: Abu Ghraib; Babylon (2); Wassit and Baghdad. Three are related to date palms. Its applied research with farmers is described as a three-step approach:

Step One: Supervision by the researcher—laboratories and fields.

Step Two: Transfer of results from the laboratories and State Board fields to farmers' fields, but under the researcher's supervision.

Step Three: Field days and other activities to enable farmer-to-farmer wide dissemination.

They state that the expertise needed for this process of research to farmer application does not rely on help from the State Board for Extension.

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[2] As a State Company, SCHF was expected to be self-financing. However, staff noted that with the war, farmers are not paying for the inputs they received from the State Company. They say that farmers owe them 1 billion dinars (although the State Company for Animal Resources is in worse shape, they say, in that farmers owe them 45 billion dinars).

The department cites the need especially for new varieties of citrus. During the 1960s and 70s, lots of citrus varieties were imported from western countries and distributed to farmers, but in the 1980s this all stopped.

The department's National Olive Project was initiated in 1999. Plans were the project would be completed in 2013 with a total of 30 million olive trees planted in desert areas and depending on groundwater and drip irrigation systems. Up to the start of the war, 8 million seedlings were planted, of which 7 million were destroyed when looting left them without shading and water because the water pumps had been stolen. Private sector olive groves were also destroyed when pumping stations were looted and sabotaged. The State Board would like to start the project again, not only for the production of olives and oil but also to reverse desertification. The project was based in six governorates—Ninewa, Tameem, Salah al-Din, Anbar, Baghdad, and Diyala. For irrigation, in the northern areas they rely on springs, and in other areas they drill wells.

The **Department of Forestry** (140 permanent employees) was moved to the MOA from the Ministry of Industry in 1998. Prior to the war, the department had three main tree nurseries and eight smaller nurseries associated with eight forestry projects around the country. These eight projects and nurseries are as follows: Wassit (4); Diyala (2); Baghdad; and Kirkuk. Total seedling production was 5 million seedlings per year. One of the eight projects for example involved 21,000 hectares of Eucalyptus (30 varieties from Australia), of which approximately 20% or 4000 hectares was planted. All 11 tree nurseries were destroyed in the period after the war. The 4000 hectares of Eucalyptus trees are also gone. People cut them for firewood because fuel for cooking was not available. Some cutting, however, was for profit. This year, the department is hoping to produce 10,000 seedlings, compared with 5 million before the war. Also, the department, since its inception in 1989, collected tree species from 30-40 countries around the world for an approximate total of 300 different species. About 50% of the species were lost in the looting.

State Horticulture and Forestry experienced significant destruction during and after the war. The main tissue culture laboratory was destroyed. Seven of its nine horticultural stations around the country were destroyed (including 140 greenhouses). All eleven forestry stations were destroyed, and half of the 300 tree species that the Department of Forestry began collecting for research purposes in 1989 from over 30 countries were destroyed.

The **Tissue Culture Laboratory** at Abu Ghraib was transferred to the Ministry of Agriculture in 1991 after the Scientific Research Council was disbanded by the government. It is described as having been very well-equipped before the war but also completely destroyed in the war. There are nine people are in the department. Two have Ph.D., two have M.Sc., and two have B.Sc. They will need to start completely over—both the laboratory and their work. A main area of emphasis, as before, will be to propagate virus-free seedlings, root stocks (apple and citrus) and potato seeds.

Several researchers in meetings to develop the Transition Plan suggested that this time period in waiting for laboratories and research stations to be re-built and re-equipped is a good time to work to refresh their knowledge and skills. Training in how to use the Internet and computer software would be helpful, they say, as well as any training on new scientific equipment, agricultural statistics specific to market-driven agriculture.

The following actions would begin to strength staff knowledge and skills.

- Providing high-speed Internet access to researchers and extensionists of the MOA and eventually to all departments and Governorate offices. An ARDI grant has already helped install high-speed Internet access to the State Board for Agricultural Research.

- Providing training on how to use the Internet and new computer software and on new scientific equipment once purchased and installed.

- Determining priority areas of training to quickly close the "science gap"—for example, the latest techniques in plant breeding—and bring to Iraq specialists to conducting training courses and seminars. This immediate action would make good use of staff time as they wait for facilities to be reconstructed and re-equipped.

- Assessing which priorities areas of training should include study tours to other countries for hands-on observation and training.

- Phasing in re-establishment of research libraries.

- Phasing in identification of priority areas for MOA strengthening with U.S.-trained M.Sc. and Ph.D. graduates—for example, economic analysis.

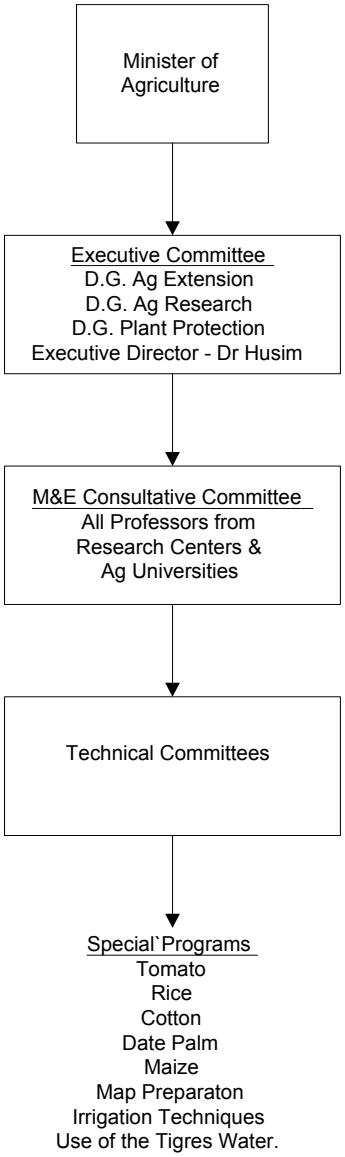
NATIONAL DEVELOPMENT PROGRAMS

Across Program Function

The general function of all the Development Programs is to support the development of strategic crops or strategic issues within the agriculture sector.

Across Program Organizational Structure

As diagrammed below, he Minister of Agriculture has established an Executive Committee to determine priorities and oversee program operations. This Committee is headed by an Executive Director. The Executive Committee appoints a Consultative Committee which provides technical support, monitors implementation progress and evaluates results. Finally there are technical committees overseeing each program.



NATIONAL PROGRAM FOR IRRIGATION TECHNOLOGY DEVELOPMENT

Function

The primary function of the National Program is to distribute new irrigation technology.

Organizational Structure

The Program has the same organizational structure as other national development programs. In addition, the Program is headed by an Executive Director assisted by a Chief technical Officer and a team at each governorate. The governorate-level team leader is typically an agriculturist from one of the universities or polytechnics in the governorate who participates in the program on a part-time basis. Other team members are full-time staff based at the governorate. A team can consist of 10 to 30 members depending on the area under irrigation.

Program Information

The program began in 2000 and is scheduled to continue until 2005. It operates in seven governorates. Center pilot, solid set and drip irrigation are the particular technologies distributed. Pivot and solid set irrigation is used primarily on wheat, maize and sunflower. Drip is used primarily for olive tree irrigation.

The Program sells the equipment at a subsidized rate (20% of the real cost). The Program supports the farmer in installation and operation and for agronomic aspects for a period of two years after installation. After two years, the farmers are considered to be sufficiently experienced to operate and maintain their own system.

The table below details the distribution of irrigation modules across Iraq. It is noteworthy that over 50 percent of these systems have been established in the Governorates of Tameem and Salah Al-Din.

Following the war, many systems were looted from warehouses. As an example, before the war there were over 4,000 center pivot systems available. These systems water between 20 and 30 ha. Currently, only about 700 remain. However, all the generator sets that were with these 700 systems have disappeared. There are currently 1,500 solid sets and 5,000 drip sets remaining in the warehouses.

Issues

- There are no generator sets for the remaining equipment in the stores so the remaining pivot irrigation sets cannot be sold.

- There is need for some policy on the sale of the remaining equipment and whether partial payment is an acceptable way for farmers to pay. This was an option before the war.

- Some of the equipment, particularly the solid set and drip systems, are made out of polyethylene. This material is degrading as it sits in the stores. The equipment needs to be installed to minimize further damage by the elements.

- As elsewhere in the MOA, staff need training in modern techniques and innovations in their particular areas of expertise.

Table: Number and area of land covered by Modern Irrigation Techniques.

		DRIP		FIXED		CENTRE PIVOT		TOTAL	
		Area/ Donum	Number	Area/ Donum	Number	Area/ Donum	Number	Total Area	% of Total
1	Ninewa	2400	320	33726	803	54800	548	90926	19.70%
2	Tameem	4005	534	89124	2122	37800	378	130929	28.37%
3	Salah al- Din	3067.5	409	24024	572	84000	840	111091.5	24.07%
4	Anbar	2437.5	325	18564	442	49300	493	70301.5	15.23%
5	Diyala	1245	166	9408	224	7700	77	18353	3.98%
6	Baghdad	697.5	93	5544	132	2200	22	8441.5	1.83%
7	Wassit	585	78	4704	112	20900	209	26189	5.68%
8	Najaf			420	10	900	9	1320	0.29%
9	Muthanna					300	3	300	0.07%
0	Qadissiya			126	3	100	1	226	0.05%
11	Kerbala	945	126			900	9	1845	0.40%
12	Babylon			126	3	500	5	626	0.14%
13	Missan					500	5	500	0.11%
14	Basrah					400	4	400	0.09%
	TOTAL	15382.5	2051	185766	4423	260300	2603	461448.5	100.00%

NATIONAL PROGRAM FOR THE OPTIMAL USE OF THE WATER RESOURCES WITHIN THE EUPHRATES AND TIGRIS BASIN

Function

The essential function of the program is to overcome the problems of water and water quality in the Basin.

Program Information

Staff for the Program are from MOA Ministry of Water Resources and from Universities.

The Program has two phases.

Phase One. Commenced in 1998 and focuses on the Euphrates.
Phase Two. Commenced 2003 and focuses on the Tigris.

Water-related problems are caused by:

- Poor use of water;
- Industrial pollution;
- Agricultural pollution such as fertilizer and pesticides run-off and
- Reduced water flows caused by upstream damming (e.g., in Syria and Turkey).

The Program has five sub-projects as follows.

1. Pollution. The objective is to determine the environmental issues and degree in which they affect the pollution of the river now and in the future

2. Use of groundwater in agriculture. The objective is to identify groundwater basins and the quality and quantity of water therein. Groundwater would be used for supplementary watering in summer.

3. Water harvesting. The objective is to investigate opportunities for collecting water for use in dry months including the determination of suitable areas where water can be harvested.

4. The use of saline water in agriculture. This is carried-out on an experimental basis and includes:
   - Use of saline water for soil leaching as an alternative to freshwater;
   - Use of salt tolerant agricultural crops;
   - Mixing saline water with freshwater to produce water suitable for irrigation; and
   - Trialing rotation of fresh and saline water for irrigation. (Note: there are approx. 10 million CM of saline water available.)

5. Salt Tolerance. Carried-out on an experimental basis, the objective is to determine what species and varieties of plants are most salt tolerant.

Program Results

Phase One Results.

- Reached a full opinion about each issue that affected the Euphrates;
- Prepared a series of models to assess present and future impacts given different scenarios; and
- Determined and mapped ground water basins estimating quantity and quality of water.

Phase Two Results.

- Divided the river in 24 sites;
- Undertook water sampling, soil sampling, drainage, salinity, pollution and other factors to build a model to predict future water quality;
- Looked at the effects of dams now and in the future; and
- Undertook research into optimal ratios for mixing saline / fresh water on various crops.

Issues

1. There is a lack of finance to continue Phase 2. The MOA commitment to the program is not clear and it will take three years to complete. Current budget is 170 million ID (USD 115,000).

2. Need for access to laboratory and new equipment.

3. Need for staff awareness and training programs in relevant fields. Bio-Saline Research Center in Dubai offers opportunity for further research and study.

NATIONAL MAIZE PRODUCTION PROGRAM

Function

To develop maize and sorghum through research on production techniques and production of high-quality seed.

Organizational Structure

The Program has the same organizational structure as other national development programs. In addition, based in Baghdad, it is led by a Director and two agricultural production assistants. Additionally, Diyala, Wassit, Najaf, Babylon, Thi-Qar, Muthanna, Missan, Qadissiya, Basrah, Tameem and Kerbala Governorates, have a Maize Production Program Team of three people each.

Program Information

The governorate-level teams are composed of agricultural researchers. They carry-out field trials on local farmer land and organize field days. Field days are held so that farmers can see and discuss the various production aspects demonstrated through the field trials.

The teams are typically housed in the Directorate of Agriculture. They share facilities with the participating Directorates. The teams work closely with MOA State Boards and Departments such as Agricultural Research, Extension, Plant Protection and Planning and Follow-Up.

Maize is used primarily for animal feed, chicken feed in particular. Thus it is grown for feed or also for seed. The planting rate is 5 kg per donum for maize and 3 kg per donum for sorghum. The maize harvest is either sold by farmers to the local market or to the Mesopotamia Seed Company. Price is dependent on the grade of production. Prices paid by Government are usually more than the market price. However, prices may vary according to the Government's demand and the availability of money to purchase seed.

The budget for the Maize Production Program comes entirely from Government.

Issues

1. There is a lack of high quality seed as well as a lack of seed varieties for trials.

2. Staff have limited knowledge of modern techniques in plant breeding, quality control, processing and research techniques.

3. There is limited new technology to extend.

NATIONAL TOMATO DEVELOPMENT PROGRAM

Function

The program functions to:

1. *Assess the suitability of new varieties*
2. *Assess the most appropriate cultivation, irrigation, fertilization and plant protection approaches.*
3. *Promote the development of nursery production.*
4. *Carry-out economic studies.*

Organizational Structure

The Program has the same organizational structure as other national development programs. It is led by an Executive Director. In addition, there are currently 10 staff in Baghdad and 50 in other governorates. Those in the governorates tend to work part time, typically 3 days day per week. These staff work on other programs when they are not engaged on the Tomato Program.

Program Information

Tomatoes are one of Iraq's principal crops. The program is aimed at the grass roots level and is carried-out in full cooperation with farmers. The process includes research in the research centers to determine the most appropriate varieties. Variety field trials are then carried-out. During the stages leading to adoption, farmers grow new varieties or use new techniques. Researchers work with farmers to carry out such research and trial work. They continue to work with farmers to assist them to implement the improved technologies and practices on their own farms.

The program is currently operational in 9 governorates. This includes Basrah, Salah al-Din, Ninewa, Kerbala, Diyala, Baghdad, Najaf and Babylon.

The program works closely with State Boards for Research, Extension and Plant Protection. It also collaborates with the soils Department from Ministry of Water Resources.

Issues

1. The program needs greater access to seed stock for trial work to enable new varieties to be trialed for their suitability to Iraq's various growing conditions.

2. Researchers, horticulturists and irrigation agronomist associated with the program need to be made aware of new production and post-harvest technologies and practices.

ATTACHMENT 4

RESEARCH AND EXTENSION JOINT PROGRAM

IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY TO STRENGTHEN RESEARCH, EXTENSION AND FARMER LINKAGES

Background and Justification

Agricultural knowledge and information delivery systems in Iraq, as in other developing countries, have been ineffective due to a number of weaknesses. These include: lack of specialists in the field of knowledge and information systems, use of inefficient traditional methods of conveying information to farmers, lack of coordination between institutions and departments involved with agricultural knowledge, and implementation of top-down extension programs. Consequently, farmer trust in the role of research in solving their agricultural problems has diminished over time. The proposed project will create coordination among the different national agencies involved in research, research planning and priorities and in agriculture knowledge exchange with beneficiary farmers, particularly small and low-income farmers. Farmers will benefit from the program due the accuracy and speed of delivery of information.

Objectives

1. To establish a national agriculture data-base unit. This unit will offer detailed scientific information for each major crop or agriculture commodity.

2. To coordinate with regional and international centers for qualifying a national team in programming and information management.

3. To improve the coordination and collaboration between different national institutes to avoid duplication in research plans.

4. To raise awareness of existing potential for improving extension and research linkages though using information and communication management tools.

Project Strategy

1. Initiation of a national data-base unit for the major crops and for agricultural problems of importance to the nation and its farmers.

2. Qualifying a national team in the area of project management and information technology programming.

3. Establishment of a steering or coordinating committee for the project. This committee will include specialists from different agricultural disciplines in addition to information technology specialists.

4. Establishing an internet linkage with selected governorates as a pilot project.

5. Depending on the success of the proceeding steps, the project will expand to remaining governorates step by step.

Work Plan

1. First step: Establishment of the project infrastructure, such as main frame unit, software, as well as qualifying team in programming and information management systems through collaboration with central laboratory for expert systems and ICARDA for expert systems and Egypt for creation.

2. Formulation of a national expert specialist committee from the affiliated universities and research centers.

3. Training of agriculture engineers of the designated governorate and extension staff on the operation and use of the proposed system.

4. Coordination with Agriculture Directorate of the designated governorates for determination of the main problems facing farmers in their area.

5. Continuous evaluation of the pilot project and movement forward to next steps.

Execution Team

1. Dr. Nazar N. Hama, Project Coordinator, MOA State Board for Agriculture Research, Baghdad, Iraq.

2. Dr. Hazim Abdul Al-Aziz, Director General of MOA State Board of Extension and Agriculture Cooperation.

3. Qassim Abdul Al-Hussan, State Board for Agriculture Research.

4. Dyaia Mahdy, State Board of Extension and Agriculture Cooperation.

5. Israa S. Shamesaldin, State Board for Agriculture Research.

6. Rana F. Al-Taiar, State Board for Agriculture Research.

Budget

Item	Amount USD
Training of Senior and Technical Staff	100,000
Experts and Consultants	50,000.
Equipment and Supplies	150,000.
Local Training	75,000.
Project Operation	25,000.
Miscellaneous	10,000.
Grand Total	410,000.

ATTACHMENT 5

MOA CAPACITY BUILDING PROGRAM LOGICAL FRAMEWORK

MOA CAPACITY BUILDING PROGRAM LOGICAL FRAMEWORK

Narrative Summary	*Verifiable Indicator*[3]	Means of Verification	Assumptions/Risks
Goal: The MOA is capable of enabling and guiding market- based agricultural growth and development.	MOA functional units are undertaking responsibilities as detailed in the MOA structure and as approved by the Minister. MOA sector support activities demonstrate integration between appropriate organizational units and partner organizations. Donors are contributing support in accordance with MOA Strategic Plan and Capacity Building framework. MOA has withdrawn from commercial activities.	Structure and Function. Documentation. Organization Audit. Program Documentation. Inspection of implementation. Donor Program Documentation. MOA Structure.	

[3] Time-frame to be established for all Verifiable Indicators in this Framework.

Component 1. MOA Structure.			
Objective 1. The structure, management and capabilities of the MOA are aligned with its functions in the newly-envisioned agricultural sector.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
1.1 MOA structure reviewed, revised and implemented in accordance with functions and responsibilities under a market-based Agricultural Sector.	MOA structure, reviewed, revised as necessary and approved by the Minister. MOA structure implemented in accordance with approved implementation strategy.	Approved documentation. Review of approved structure and implementation strategy.	Management and staff remain committed to the reviewed structure.
1.2 MOA Strategic Management and Administration Plan established, based on 1.1 above, and implemented.	MOA Strategic Management and Administration Plan approved by the Minister. MOA Strategic Management and Administration Plan implemented as approved.	Approved Plan. Review of progress against approved Plan.	Management and staff embrace the Plan and support its implementation.
1.3 MOA Human Resource Development Plan developed in accordance with 1.1 & 1.2 above, and implemented.	Human Resource Development Plan approved by the Minister. Human Resource Development Plan implemented as approved.	Approval documentation. Quarterly Internal review of Human Resource development plan Implementation progress.	Staff are willing to take on new roles and participate in retraining initiatives. Staff are not lost to the system. Adequate funds are available to carry out the program.
1.4 MOA Systems Development Plan established, based on 1.1, 1.2 and 1.3 above, and implemented.	MOA Systems Plan approved by the Minister. MOA Systems Plan implemented as approved.	Approval documentation. Quarterly Internal review of Human Resource Development Plan. Implementation progress.	Staff are willing to change the existing management and administration practices. Adequate funds are available to carry out the program.

Component 2. Enabling Private Sector Participation			
Objective 2. The entry of the private sector into traditionally state-run commercial activities and investment by the private sector in agriculture is enabled and promoted by the MOA.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
2.1 Policy areas that may impact on a market-based sector as well as the entry of the private sector into traditional Government commercial support functions identified.	Policy analysis identifying key policy areas, completed and approved by the Minister.	Policy analysis documentation. Approval documentation.	Management and staff remain committed to the reviewed structure.
2.2 Data collection and analysis that will inform management and decision-makers as to the key issues surrounding policy areas identified in 2.1 completed.	Data collection and analysis completed for each policy area identified in 2.1 and approved by the DG of Planning and Follow-up.	Data and analysis documentation. DG approval.	Policy-makers acknowledge and account for the data and analysis in their policy formulation.
2.3 MOA strategies and policy positions in relation to policies identified in 2.1 above determined.	Policy Position Papers for each policy area identified in 2.1 completed and approved by the Minister.	Ministerial approved position papers.	Policy recommendations are accepted and approved by the Governing Council.
2.4 MOA regulatory frameworks reviewed and revised in accord with the needs of the market-based sector.	Reviewed and revised regulatory frameworks approved by the Minister.	Revised regulatory frameworks. Approval documentation.	Regulatory frameworks are accepted by end-users.
2.5 Necessary training and awareness programs in support of the implementation of the revised regulatory frameworks implemented.	Training and awareness programs developed and approved by DG Planning. Training and awareness programs implemented.	Approved training and awareness programs. Training/awareness records.	Staff use skills gained. Staff are retained in the system. Staff have adequate access to resources necessary to use the skills they have gained.

Component 3. Research and Extension			
Objective 3. New production and processing technologies, practices and markets are identified, introduced and promoted to farmers and to the private sector by an active and linked MOA research and extension capability.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
3.1 Research and extension facilities are re-equipped and fully operational.	Central research facilities in Baghdad, plus 7 regional experimental stations and 6 regional agriculture training facilities are fully equipped and operational as per MOA approved specifications.	Approved specifications. Site visits.	Locations of sites remain relevant to MOA requirements. Security of facilities can be maintained.
3.2 Research and extension staff exposed to and trained in modern research and extension practices.	Research and extension staff undergo training and awareness activities as per MOA approved staff development program.	Approved program. Attendance records. Evaluation Reports.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.
3.3 Improved academic qualifications of selected research and extension personnel.	Selected research and extension personnel complete MOA approved MOA development program.	Approved academic development program. Records of Achievement.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.
3.4 Staff contribute to and access up-to-date information from a system-wide knowledge-base.	Knowledge-bases, including for example, libraries, expert systems, specimen banks, etc are in place, are fully accessible to, and are being utilized by MOA staff.	Review knowledge-bases against specification. Review facilities and associated policies on access. Review utilization records.	MOA allocated ongoing recurrent funding to maintain these facilities. Facilities remain secure.
3.5 There is a seamless transfer of information beneficial to the agricultural sector between research and extension to the end user.	Application of approved research findings to agricultural production practices disseminated to farmers in accordance with MOA approved time-frames.	MOA approvals. Extension service records. Farm surveys.	

Component 4. Plant and Animal Protection			
Objective 4. An effective plant and animal protection capability that ensures food safety and security and conforms to international standards is achieved.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
4.1 Plant and animal protection facilities including quarantine facilities established and operational.	Facilities completed and equipped as per specifications. Facilities operational as per MOA approved functions.	Inspection of facilities. Specifications documents. Inspection of facilities.	Facilities are maintained and secure. Adequate finances are made available for operations.
4.2 Plant and Animal protection policies and regulations reviewed and revised (Ref 2.3 & 2.4)	Revised policy and regulatory documentation approved by the Minister.	Policy and regulatory documentation. Approval documentation.	Public and private sector follow established policies.
4.3 Staff awareness and skills development program completed.	Staff skills and awareness programs developed and approved by the MOA. Staff skills and awareness program implemented as per the approved plan.	Skills and awareness program Approval documentation. Training records.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.
4.4 Plant and animal protection knowledge-base developed and integrated within the overall MOA knowledge-base (ref 1.4).	Plant and animal protection knowledge-base developed as per agreed plan. Plant and animal protection Knowledge-based incorporated into central MOA systems.	Knowledge-base. Agreed plan. Inspection of central systems.	Adequate funds and resources are made available to update and maintain the knowledge base. Staff use the knowledge base and update it with relevant information
4.5 Integration with other units within MOA, particularly research and extension, strengthened.	Increased number of programs of support to the sector demonstrate integration between the various units.	Review of MOA programs.	Functional Units understand the principles of cooperation and integration and remain committed to the principles.

Component 5. Economic Analysis, Monitoring and Evaluation			
Objective 5. Accurate information on the market-based agricultural sector to fully inform management, policy-makers and the private sector is provided by a strengthened MOA economic monitoring and analysis capability.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
5.1 The functions of the Directorate of Planning and Follow-up reviewed and revised.	Directorate of Planning and Follow-up reviewed and functions revised. Review documentation approved by the DG.	Review documentation. Approval documentation.	Staff remain committed to revised functions.
5.2 Skills development program to strengthen the Agricultural Economic Department developed and implemented.	Skills Development Program developed and approved by the DG. Program implemented as per approved plan.	Skills Development Program. Approval documentation. Training records.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.
5.3 Planning, Monitoring and Evaluation Skills development program developed and implemented within the Directorate of Planning and Follow-up.	Planning, Monitoring and Evaluation Skills Development Program developed and approved by the DG. Program implemented as per approved plan.	Planning, Monitoring and Evaluation Skills Development Program. Approval documentation. Training records.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.
5.4 Statistical data collection and analysis capability expanded.	Data collection and analysis needs, skill development needs and data sources identified and quantified. Skilled staff and other resources needed to support collection and analysis needs established.	Needs analysis documentation. Inspection of staff and resource allocation.	Trained staff are retained. Trained staff utilize their new skills and knowledge in performance of their functions.

Component 6. Supporting Disadvantaged and Rural Groups.			
Objective 6. Disadvantaged groups and the re-establishment of rural communities are supported by the MOA to allow subsistence farmers to take advantage of market incentives for agricultural production.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
6.1 A working group(s) established that has responsibility for developing MOA strategies for support to disadvantaged rural groups including the displaced.	Working Group(s), widely representative of Iraqi communities, nominated, selected and approved by the Minister.	Approval documentation.	Working group remains committed to program ideas. Adequate funds remain available for programs.
6.2 Key skills to support necessary capacity of Working Group(s) developed.	Capacity building activities completed in accordance with MOA approved skill needs- analysis.	Skill Needs Analysis. Training records. Evaluation reports.	Participating staff are retained. Participating staff utilize skills gained.
6.3 A Situation Analysis of the scope of issues surrounding disadvantaged, including displaced, rural communities completed.	Situation Analysis completed and approved by the MOA.	Situation Analysis. Approval documentation.	Key skills gained enable groups to conduct Situation Analysis.
6.4 Guidelines for scope of MOA support approved.	Guidelines detailing the scope and regulations associated with support program approved by MOA.	Guidelines. Approval documentation.	MOA remains committed to approved guidelines.
6.5 Support programs, which assist targeted communities/ groups developed and approved.	Support programs developed and approved by MOA.	Support program documentation. Approval documentation.	Target communities, groups remain committed to the program objectives.
6.6 Support programs implemented.	Support programs implemented in accordance with approved schedules and budgets.	Support programs. Site Inspections.	Adequate funds remain available.
6.6 Support programs monitored and evaluated.	Support programs monitored and evaluated in accordance with approved framework.	Monitoring and evaluation framework. Reports.	Staff available to conduct monitoring and evaluation.

Component 7. Increased Public Awareness			
Objective 7. Iraqi public and private sectors and international partners are aware of Iraq's agricultural development agenda, its benefits and the roles of the MOA and the private sector in it.			
Narrative Summary	***Verifiable Indicator***	**Means of Verification**	**Assumptions/Risks**
7.1 Stakeholder analysis completed including an information needs analysis.	Stakeholder analysis completed and approved by MOA.	Stakeholder analysis. Approval documentation.	Stakeholders remain committed to overall vision for agriculture.
7.2 Awareness program, which incorporates strategies to deliver awareness programs to all stakeholders identified in 7.1 above, developed and approved.	Awareness program developed and approved by MOA.	Awareness programs. Approval documentation.	Trained staff are retained Trained staff utilize their new skills and knowledge in performance of their functions
7.3 Awareness program implemented.	Awareness program implemented as approved.	Awareness program documentation. Review of progress.	Implementation funds remain available.
7.4 Awareness program monitored and evaluated.	Quarterly monitoring and evaluation of Awareness program completed. Lessons learn incorporated into improved program methodologies.	Evaluation documentation. Review of revised programs.	Monitoring and evaluation staff available.

ANNEX 5

WHEAT PRODUCTION PROGRAM

TABLE OF CONTENTS

WHEAT PRODUCTION PROGRAM

PROGRAM DESCRIPTION

Wheat is the staple crop of Iraq, grown for thousands of years. Wars, embargoes and the disincentives of the OFF/PDS distribution have combined to reduce overall yields to less than a ton a hectare of often low-quality smutty wheat. 2002-2003 output was estimated to be between 1.2 and 1.5 million tons, of which perhaps 50 percent was flour-quality wheat. To feed the population, the Public Distribution System purchases approximately 3.2 million metric tons of flour-quality wheat a year, in recent years importing 3 million tons of Australian or US wheat.[1] Total Iraq consumption is estimated to be 4 million tons, but this estimate may be as flawed as others in the agricultural sector.

Northern Iraq has temperatures and rainfall patterns that are suitable for wheat production. Wheat programs sponsored by commercial companies in the 1980 produced three tons of flour-quality wheat per hectare in areas receiving 400+ mm of rainfall near Erbil. This is far more then the 1,200 kg average yield reported for the governorate in 2003, given that 55 percent of the districts/sub-districts report 400+ mm of rainfall, while 27 percent report between 250 and 400 mm.[2] In drier locations, moisture retention technology—no tillage, fallowing, retained crop residue, herbicide application—has allowed Australian producers to obtain 3 metric tons per hectare in areas with 350 mm (14 inches) rainfall.

The spacing of the rains and the amount of moisture in the soil at the start of the season is nearly as important as the total amount. If the fields lie fallow for a year (no cultivating, perhaps cutting the weeds or volunteer crop) then there is higher soil moisture to start the next year. The planting method is to drill seed in at the bottom of the drill furrow at a shallow depth so the moisture collects near the seed to permit germination. The farmers can lay a strip of fertilizer under the seed as well. Herbicides kill the weed competition. The spring rains can be used to maximum benefit on a well-established crop. Then is it possible to average closer to 2 tons per year over time with best practices. By eliminating plowing and using more precise seed drilling in order to reduce the amount seed required, two major costs of production will be significantly reduced. In this situation the improved technology actually costs less than the traditional technology, even with the application of fertilizer and herbicide.

In addition to yields per hectare, wheat is measured by protein and gluten content. Anything less than Grade 1 wheat cannot be used for flour production without mixing with higher-gluten varieties. Grade 1 is determined by variety (wheat seeds that provide high percentages of protein/gluten), by cultivation practices, and by the cleanliness of the harvest. Only 10 percent of Iraqi wheat is estimated to have been Grade 1 in 2003. MOA presently is

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[1] See Annex 2 for a description of the PDS program that provides 9 kilos of flour per person per month and Annex 1 for a discussion of wheat grades and flour-milling activities in Iraq.

[2] And the total wheat production estimates from the two reporting Regional Ministries add to far more than was actually produced by any other estimate. Ministry of Agriculture and Irrigation, Agriculture in Iraqi Kurdistan Region, Erbil, 2003, page 5,10.

conducting winter wheat demonstrations with seed provided by ICARDA. The most prominent local variety is a cross developed from earlier CYMMIT releases. There is a need for upgraded wheat varieties, but much to be improved in the remainder of the production chain.

The wheat varieties and production technologies that produce high yields of grade 1 wheat in high rainfall and dryland wheat are known. What has not been available is a country-wide program to introduce new technologies that farmer's can adopt. As prices of inputs and outputs change rapidly, there is uncertainty concerning the price point for wheat at which the various technologies, including supplemental irrigation, are appropriately applied. This will be one major output of the project: economic models of various technologies related to the cost of inputs and the output price of wheat. Rotating a rainfed lentil with wheat can be an excellent model. The legume adds nitrogen to the soil.

The Wheat Production Program is designed to provide modernization for the wheat industry: breeding and testing of new high-gluten wheat varieties, certified seed multiplication, cleaning, treatment and bagging and re-distribution for sale to farmers, land preparation, planting, input application, harvesting, transportation, storage and flour milling. The majority of wheat is grown in the north, estimated to be 80 percent rainfed, with most production in rainfall areas between 350mm and 1000mm. The growing area spans 7 governorates, including three Kurdish Regional Local Authorities. See the accompanying maps for a rendition of the most promising wheat growing areas.[3]

This program requires the resolution of several thorny policy issues. Past subsidization of agricultural inputs combined with low output prices removed decision responsibility from individual farmers and greatly reduced quality incentives. Administrative decisions taken to increase prices for the 2004 wheat crop are married with agreements to eliminate, over four years, input subsidies. The government should exit wheat production decisions in the next few years, continuing only to set a floor price to stabilize farmer returns. Policy recommendations earlier in this Transition Plan proposed allowing the mills to purchase wheat from any source—domestic or international—and sell flour to the PDS program. The freeing of the wheat market would not only increase the price of flour-quality wheat—closing the $70 per ton gap between domestic and imported wheat in 2004—but increase the gap between first and last quality wheat, increasing farm incentive to adopt modern production technology. One component of the policy change is to commercialize, or privatize, MOT grain storage, and ensure the prevalence of privately-owned flour mills.[4]

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[3] Wheat is and can be grown in irrigated conditions south of Baghdad. Until proven otherwise, irrigated wheat in very hot climates is unlikely to have long-term comparative advantage over crops, such as cotton, more naturally suited to the environment. However, see below for recommendations of a rotation in which wheat is grown with fodder and high-value crops.

[4] Annex 1 reports on the potential backsliding from a commitment to a market-based agricultural sector by the establishment of new government operated flour mills.

PROGRAM OBJECTIVE

The Wheat Program is a national effort designed to increase production to 2 million tons per year of flour-quality wheat—an increase of 1.5 million tons—reducing imports by 2 million tons, a savings of foreign exchange in 2004 relative prices, of $105 million dollars a year, every year Wheat farmers will maximize their income from the wheat crop by finding the right mix of technology for their land and rainfall conditions. The government will have updated facilities for wheat seed breeding and testing, seed multiplication, treatment and distribution, soil testing and disease identification. The private sector will supply the inputs and equipment at market prices. Transportation and storage will move to private sector control. Government will establish special programs to assist those unable to take advantage of market prices without credit or input support from farmer associations or cooperatives.

After modernization, Iraq's northern area farmers will be set to compete against foreign wheat suppliers: Australian, Canadian, US, Argentina, Russia, with technology that fits their local conditions. Wheat yield and quality increases are expected to be mainly from the rainfed crop with some supplemental irrigation. In the early years of modernizing the wheat crop, the emphasis will be on the north. However, wheat grown in a rotation with alfalfa, lentils, and vegetables under irrigated conditions, that is, wheat included in an irrigated farming system, could offer high returns using high-yielding and adapted varieties if scaled to labor and equipment availability and market demand.

ORGANIZATION OF THE PROGRAM

The Wheat Production Program would be directed from within the Ministry of Agriculture in Baghdad and the Regional Local Authorities Agriculture in Arbil and Sulaymanya, in cooperation with research agencies and colleges of agriculture. A Working Group composed of Ministry personnel from the Central South and North would include:

- Field Crops Research (wheat breeding), Research Stations, Colleges of Agriculture;
- Seed Certification and Multiplication; and
- Extension and Farmer Training.

Added to this group would be representatives of the 2 governorates selected for the pilot program: Arbil and Ninawa, and representatives from the private sector for input supply and transportation. Representatives of the flour millers and the grain silo storage should be ex-officio members, available to provide information on how increased wheat production can best be prepared for storage and milling.

The Working Group would charter a Secretariate that contains a Program Manager, monitoring and evaluation personnel, and administrative staff, provided by a donor project. The Secretariate would link all members of the working group with field staff, collect and disseminate information on wheat production, and publish regular monitoring reports on the progress of the project to date.

The Working Group would be provided expert technical specialists to assist in determining the wheat varieties to be tested, multiplied and distributed, program support for field testing and demonstrations, use of technology and equipment; and measurements of the wheat crop against important parameters: yield, cleanliness, wheat grade, percent gluten and milled flour quality. The value of the output will be matched against the costs of the inputs, labor and machinery used in production to determine the best solutions given soil and water conditions.

TECHNICAL REQUIREMENTS

In the first season the project would have three tracks. First, field trials would be conducted with farmers of the two pilot governorates, using the best available local treated certified seed, selecting various patterns of soil and rainfall characteristics. Each four donum trial would be closely monitored to capture all input costs and results. Low rainfall technology will be applied where experience has shown that yields are compromised by a lack of soil moisture. This track will provide results from trials conducted by farmers assisted by the project.

The second track will be a re-vitalized wheat seed breeding and testing program to examine new varieties under rainfed conditions, rainfed with supplemental irrigation, and irrigated lands. The results of the ongoing bread-wheat pilot demonstrations of local and international varieties will be used to build a new breeding and multiplication program. For those locations with a high probability of rainfall or with supplemental irrigation, high-yielding varieties should be tested. For rainfed lands that may have rainfall shortages some years, drought-tolerant varieties will be tested. Special varieties will be tested for irrigated wheat in areas of low rainfall. This track will provide new varieties, after several years, that can be multiplied and certified for the special conditions of farmer's fields.

The third track is to greatly expand and improve the seed multiplication, certification, sand cleaning treatment of the Ministries. High-yielding wheat begins with quality seeds, treated to prevent the rust conditions prevalent in northern Iraq. It is unlikely the private sector is going to actively promote a proprietary wheat variety—self-pollinating crops do not lend themselves to high returns for private sector agribusiness companies, as do hybrid maize seeds. Instead, this should be a function provided by the government, sold as prices that recover as much of the cost of certification and treatment as feasibility, but low enough to ensure that the treated varieties are within the financial reach of the farmers.

By the third season of the project, many of the answers will have been found, and the technology will be placed in the hands of re-trained and re-schooled extension agents who will work with farmers to greatly expand the knowledge that has been gained. We would expect to see 50 percent gain in quality wheat production in Erbil and Ninewa by the end of the third year. The package should then be continued to be promoted to the remaining 5 governorates in the north.

DESIGN PROCESS

This project must be assembled by a Design Committee of the Wheat Production Program Working Group assisted by a representative of the funding donor. The design must identify the overall indicators of success—perhaps in this case: farmer adoption of high-yielding and profitable wheat production technology. The project must define the actions to be taken for each of the three tracks, or others if the Design Committee finds alternative actions that should be supported. This must include a specification of supporting government actions in varietal testing, multiplication, certification, distribution and the conduct of farmer's field trials, with action responsibilities and indicators of success for each component of every track. Each set of activities must be costed and a budget prepared for the first calendar year, so that once completed, the design can be reviewed and approved by the donor. Both the design and the budget should be updated every six months so that possibilities not previously considered can be added to the program, or failures, if they occur, can be removed.

An overall program budget cannot be determined now. Instead, budgets will be generated for specific activities, approved, and actions commenced. The Monitoring and Evaluation Team will report on inputs and output, and program success against the indicators established as the project begins. The donor will review progress and approved advance funding for each six months, a "rolling six months design" with budget. This will allow for changes in program emphasis, the addition of new program activities, all defined, costed and with complete with success indicators.

IMPLEMENTATION SCHEDULE

The program schedule, subject to improvement by the Working Committee, might be considered as follows:

June–September 2004

Organization of the Working Committee, Design of the Project, selection of certified wheat seed for trials, preparation for varietal testing, multiplication, certification and field trials in the 2004–2005 season.

October 2004–September 2005.

Conducting of wheat breeding experiments, varietal testing, multiplication of existing wheat varieties, certification of varieties, seed multiplication on a far larger scale than previously, cleaning, treating and packaging seed for next year. Collection of the field data by the Monitoring and Evaluation Unit, and report on the success and problems of the first year's 3-track program.

October 2005–September 2006

Expansion of the trials to far larger demonstrations in each district and sub-district of the two governorates. Multiplication of new tested wheat varieties for distribution in the following year. Collection of the field data by the Monitoring and Evaluation Unit, and report on the success and problems of the second year's 3-track program.

October 2006–September 2007

Full coverage of the two pilot governorates and expansion into two additional governorates with the results of the two-year field trials. Multiplication and certification of seed to cover 50 percent of the requirements for the 7 northern governorates. Collection of the field data by the Monitoring and Evaluation Unit, and report on the success and problems of the third year's 3-track program.

October 2007–September 2008

Full coverage of all 7 northern governorates with the expanded modernization program with certified seed designed for varying conditions available for all land to be planted. Collection of the field data by the Monitoring and Evaluation Unit and reporting on the success and problems of the fourth year's 3-track program.

WHEAT PRODUCTION PROGRAM BACKGROUND

The remainder of this Annex addresses three questions:

- What is the best estimate of domestic wheat production for 2004?
- How much of the domestic wheat is flour-grade? and
- What is the contribution of ongoing winter crop technology demonstrations to a Wheat Production Program?

PRODUCTION ESTIMATES FOR 2004

The winter crop was planted prior to the announcement of the floor price for the wheat crop in 2003-2004: $180 a ton for grade 1 wheat, descending through grades 2 ($169) and grade 3($155) to animal feed grade 4 ($130). There was very little fertilizer imported for the crop, perhaps 20,000 tons early in the year under OFF before the shift from the FAO/WFP to CPA left further fertilizer purchases unfunded. Much of the early fertilizer was shipped to Salah al Din. Erbil, from a separate OFF shipment, reported 4,000 tons provided for this year's crop.

There was also very little certified wheat seed sown. Erbil reported 1,000 tons cleaned and treated for two governorates in the north. The seed multiplication system was disrupted in the south and charges to farmers were such that, with last year's wheat prices ranging from $105 to $75 a ton, only a small percentage of farmers made purchasers of certified seed from the distribution centers. Even if farmers learned after planting the higher prices for this year's wheat crop and desired to add fertilizer and herbicides, it was too late in the season, and there was not a sufficient supply in the market. The Ministry announced fertilizer would be coming from the OFF program but the quantity available covered only a small percentage of the crop. Thus, for the most part, the 2004 wheat crop was sown with captured seeds, making the crop susceptible to smut, with less than the average amount of recommended fertilizer or agricultural chemicals for the crop.

Production for 2002–2003 suffered from many of these same circumstances, including low wheat prices but OFF programs distributed inputs to favored farmers and regions. Any farmer growing higher grades of wheat had a strong incentive to get it across the border which offered 50 percent premiums over government prices.

The estimates of the wheat crop for 2003 provide an insight into the fragile nature of statistical reporting in Iraq. Adding the official production figures of the Ministry of Agriculture (15 governorates) and the two Regional Local Authorities in the north (3 governorates) provides a total of 3.3 million tons of domestically produced wheat. Few take this number seriously. It is the result of an incentive system that favors exaggerating land under cultivation and yields to receive government-distributed agricultural inputs.

The FAO, in a thoughtful survey of cereal output possibilities, visited 18 governorates, undertook field surveys in the north and south, used estimates from Ministry officials in the Central where security conditions prevented its teams from visiting, and provided a wheat production estimate of 2.55 million tons.[5] Their report demonstrates that through 2002, the government was providing deep subsidies to wheat production, and certified seed were made available to those locations designated as key production areas.

The CPA Senior Advisor to the Ministry of Agriculture, a USDA grain trading specialist, much later in the crop cycle said production for 2003 was between 1.2 and 1.8 million tons, moving around a useful average of 1.5 million tons.[6] Assuming the wheat crop was sold to the government, $128,362,523.50 was expended from the Development Fund for Iraq for domestic wheat purchases.[7] At $85 a ton average, this comes to 1.5 million tons of wheat, although the FAO reports an agreement for MOT to purchase up to a maximum of 1.25 MT.[8]

For 2003, there is a pick of production numbers. The double-check provided by tons of imported grain under FAO/WFP and CPA-managed OFF was not available. We expect

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[5] FAO/WFP, Crop, Food Supply and Nutrition Assessment Mission to Iraq, 23 September 2003.
[6] Interview with Lloyd Harbert, USDA, Senior Advisor to the Ministry of Agriculture, CPA, March 1, 2004.
[7] Development Fund for Iraq Payments, payment summary by Project Category: As of 01 April 2004, CPA website.
[8] FAO/WFP, Crop, Food Supply and Nutrition Assessment Mission to Iraq, page 21.

imports to be 3 million tons when combined with 2004 semi-emergency orders—since 2004 orders early in the season would be the result of shortfalls in the 2003 domestic wheat and international procurement system. For our purposes, we use the figure of 1.5 million tons of all grades of wheat produced in 2003. We would expect no more, and probably less in 2004.

How Much Domestic Wheat Is Flour Grade?

Here is an estimate provided by the Agribusiness Specialist on the Transition Team when asked this question:

For the Northern Four Governorates

For Dahuk, Erbil, and Sulaymaniyah governorates assume w/ yields of 800kg/ha. Ninewa is typically higher so allow a 10 percent boost or 880 kg. Weighted northern yield is 825 kg. Production in the North: 740,000 to 910,000 metric tons on 900,000 to 1,100,000 ha.

Assume 10 percent yield of Grade 1 and combined 60 percent for Grades 2 and 3, and 30 percent Grade 4.

Assume 60 percent clean wheat yield from Grades 2 and 3 (40 percent smutted grain is separated).

With 740,000 ton production estimate, there are 74,000 tons Grade 1 and 220,000 tons clean Grades 2 and 3. Grades 2 and 3 are considered as semi-hard (medium protein) compared to Grade 1 hard (high protein), so the gluten content of Grades 2 and 3 will be inadequate without blending with imported wheat.

The total is 294,000 tons flour-grade wheat with 740,000 metric tons produced. With a 910,000 ton production estimate there are 91,000 tons Grade 1 and 273,000 tons of cleaned Grades 2 and 3. Total flour-grade wheat: 364,000 tons.

For the Rest of Iraq

Add 30 percent to 40 percent (use 35 percent) wheat ha. for the rest of the country compared to the north). This adds between 260,000 to 320,000 total wheat ha. for the rest of Iraq.

Assume worse yields compared to north - say 650kg - for total production of between 169,000 to 208,000 tons. Further consider that the varieties grown in the south have less gluten/protein and thus are more likely to be Grade 2 and 3.

Assume lower percentages of Grades 1, 2 and 3 and more smut in Grades 2 and 3. Grade 1 is 5percent, Grades 2 and 3 are 40 percent of total and portion of clean wheat obtained from Grades 2 and 3 is 50 percent.

With 169,000 ton production estimate there are 8,500 tons Grade 1 and 34,000 tons clean Grades 2 and 3. Total flour-grade wheat is 42,500 tons.

With 208,000 ton production estimate there are 10,500 tons Grade 1 and 41,500 tons clean Grades 2 and 3. Total flour-grade production is 52,000 tons.

Grand totals are between 336,500 tons and 416,000 tons flour-grade wheat produced in Iraq in 2003-2004 from total production of 1.16 million tons (low estimate) or 1.42 million tons of wheat (high estimate).

CALCULATING PDS REQUIREMENTS

Between 3.2 and 3.6 million tons of wheat are required to make the flour in the PDS distribution (see Annex 2). The desired mix of domestic to imported wheat is 60 percent international and 40 percent domestic. This would require 1.28 million tons of domestic flour-quality wheat. Even if the error variance of the above calculation is 100 percent below actual, there still is not sufficient flour-grade domestic wheat to match with international imports to meet PDS requirement. Further, Grade 1 domestic wheat can substitute for imported wheat, making efficient import substitution a real possibility in a nation-wide wheat improvement program. It is this very significant shortfall in flour-grade wheat output that provides the basis and economic justification for the Wheat Production Program.

The Contributions of the Winter Crop Technology Demonstration Project

Winter Crop Technology Demonstrations were initiated in December/January to test new and local varieties under modern production systems. Approximately 21 metric tons of improved bread wheat, durum wheat, barley, chickpea and lentil seed were purchased from ICARDA and transported from Jordan. This was complemented by approximately 30 metric tons of locally available seed, both improved and traditional varieties. Appropriate applications of fertilizer, pesticide and cultural practices will be used on the demonstration plots.

The Ministry of Agriculture administers the program in cooperation from the Colleges of Agriculture at the University of Mosul and the University of Baghdad. The universities will conduct the field trials. The Steering Committee represented:

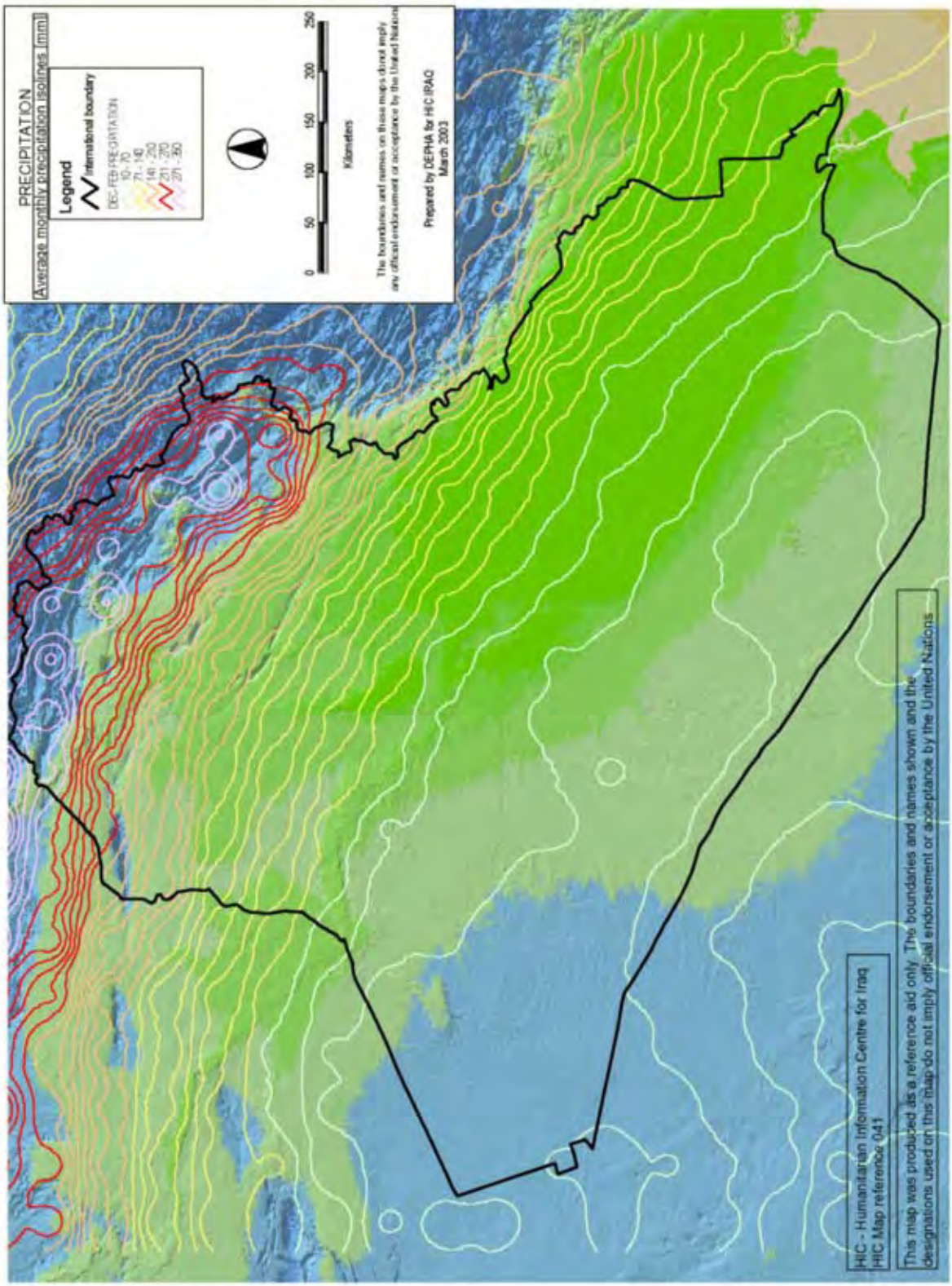
- Ministry of Agriculture;
- IPA Research Center;
- University of Baghdad; and
- ARDI/Texas A&M.

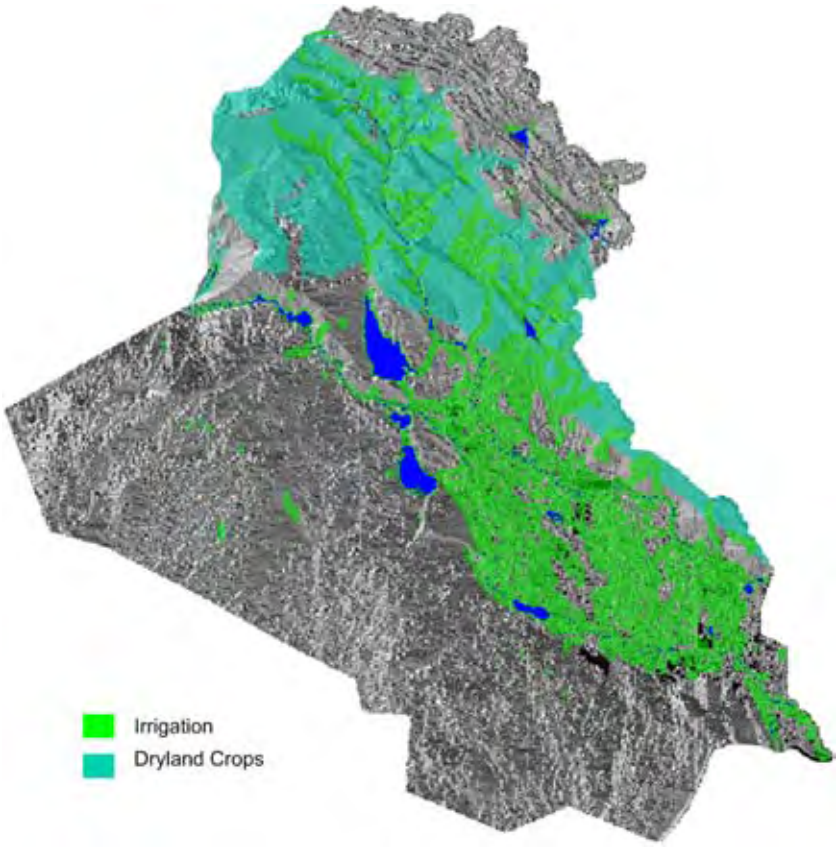
The National Management Committee included these institutions and the Ministry of Technology. There were 8 field teams, working on the different conditions under which the varieties would be tested.

The tests were in rainfed crops, rainfed with supplemental irrigation, irrigated normal and irrigated with saline soils. More than 400 ha were planted, in 123 demonstration plots. The full results will be known at harvest, in a few months.

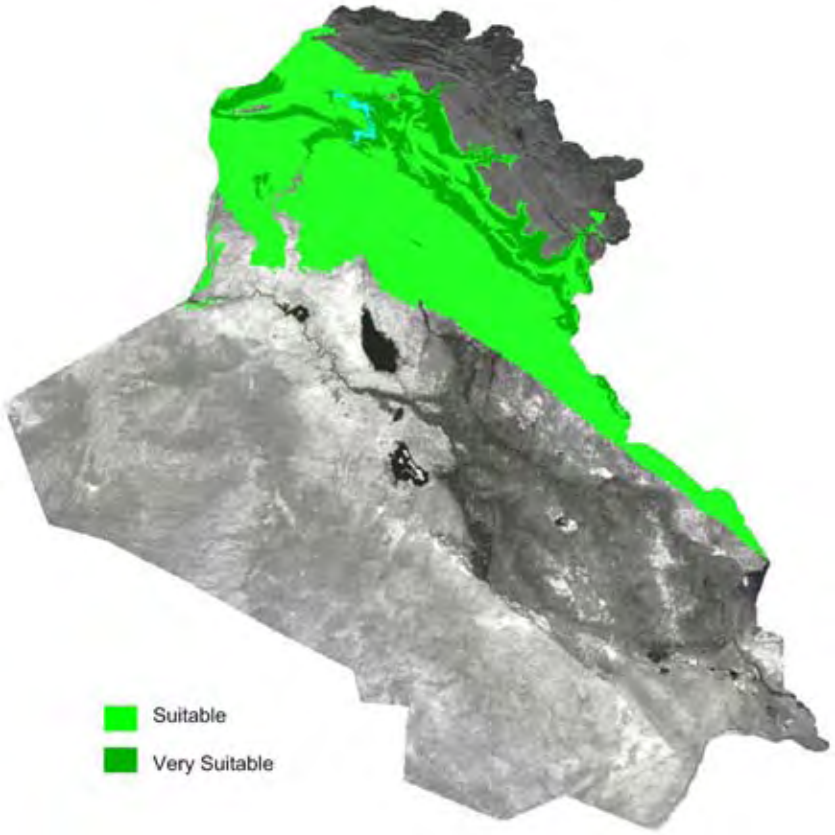
The significance of these crop demonstrations is two-fold. First, these are the first trials with imported and locally available seeds in many years. They will show the difference in yield and quality that is obtainable with good seed stock and modern production technology. Second, the demonstrations have brought together committees of all the institutions most interested in the introduction of new agricultural technology. These same institutions and individuals would be major participants in the Wheat Production Program.

The following pages show wheat suitability maps and pictures taken approximately half way into the crop cycle for wheat production, showing field demonstrations contrasted with the same farmer's planting under more traditional production methods.


PRECIPITATION
Average monthly precipitation isolines [mm]
Legend
International boundary
DEC-FEB PRECIPITATION
10 - 70
71 - 140
141 - 210
211 - 270
271 - 360
0
50
100
150
200
250
Kilometers
The boundaries and names on these maps do not imply any official endorsement or acceptance by the United Nations
Prepared by DEPHA for HIC IRAQ
March 2003
HIC - Humanitarian Information Centre for Iraq
HIC Map reference 041
This map was produced as a reference aid only. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

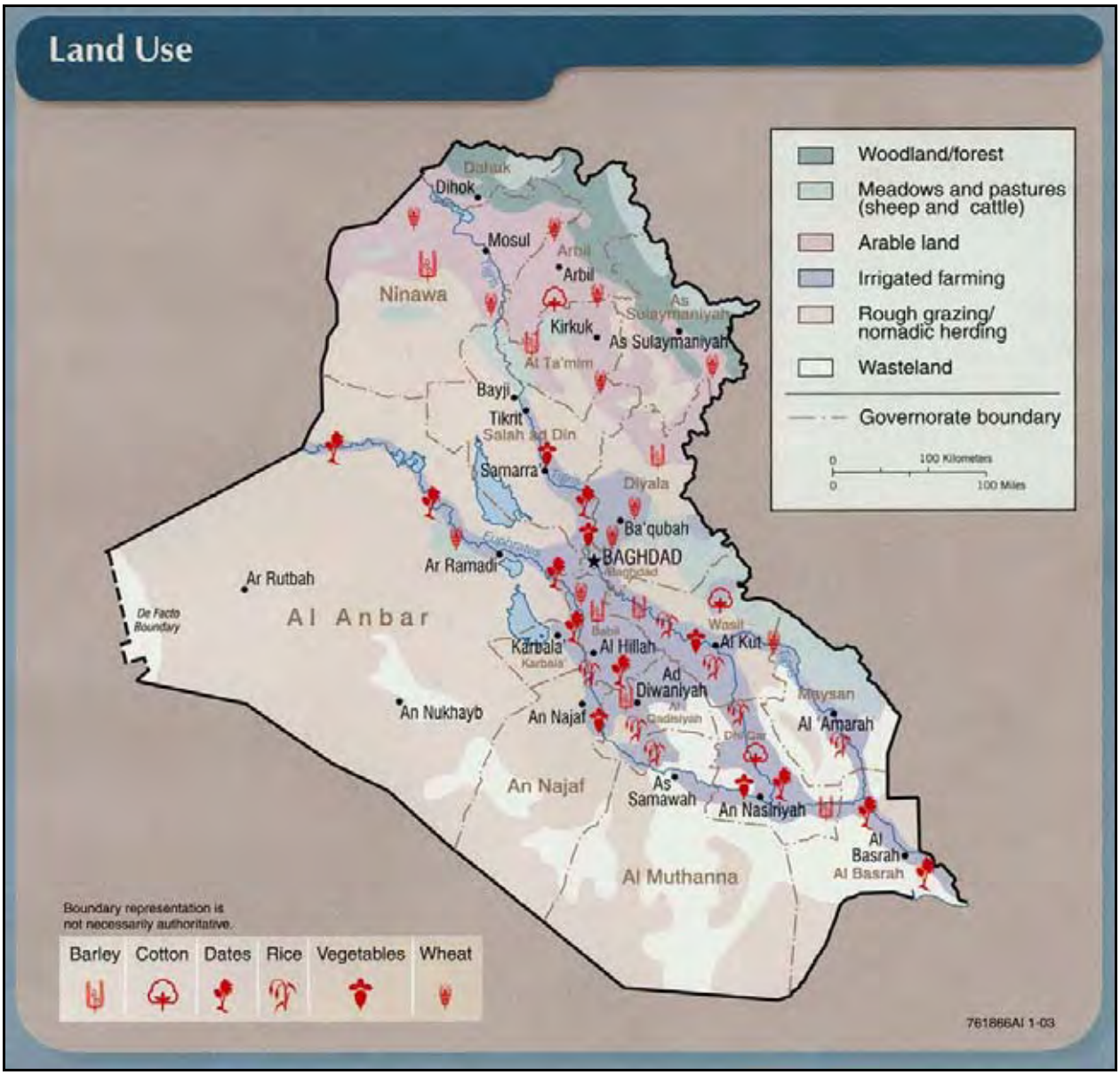


Wheat Growing Areas in Iraq

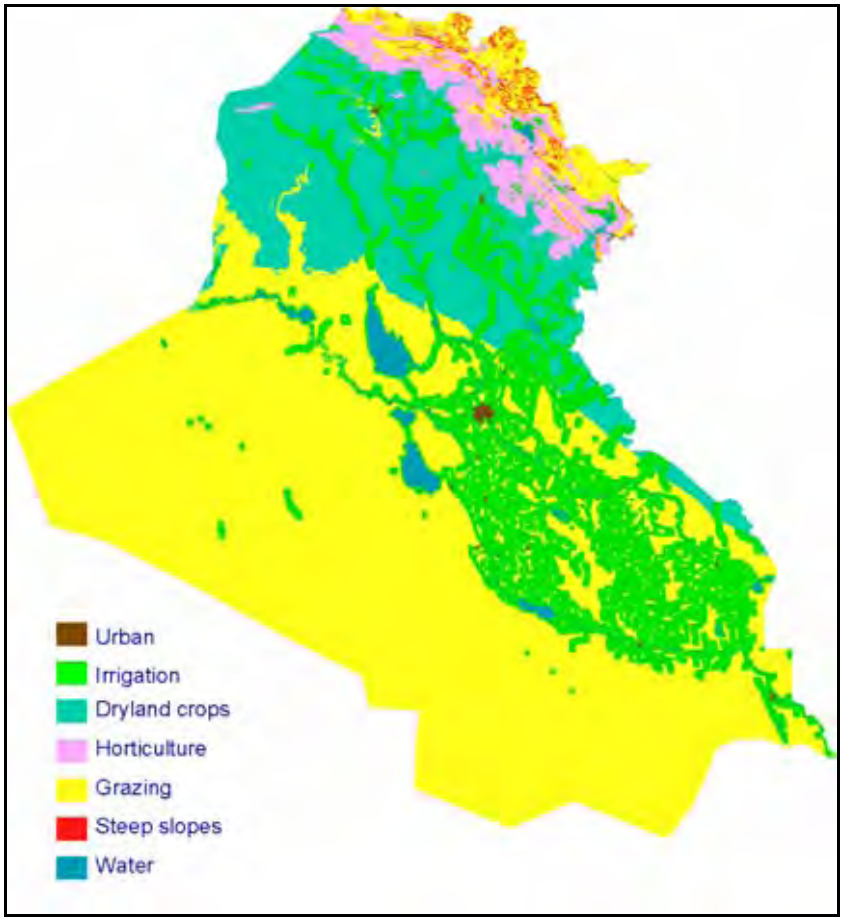


Wheat Growing Areas with Suitable Climate

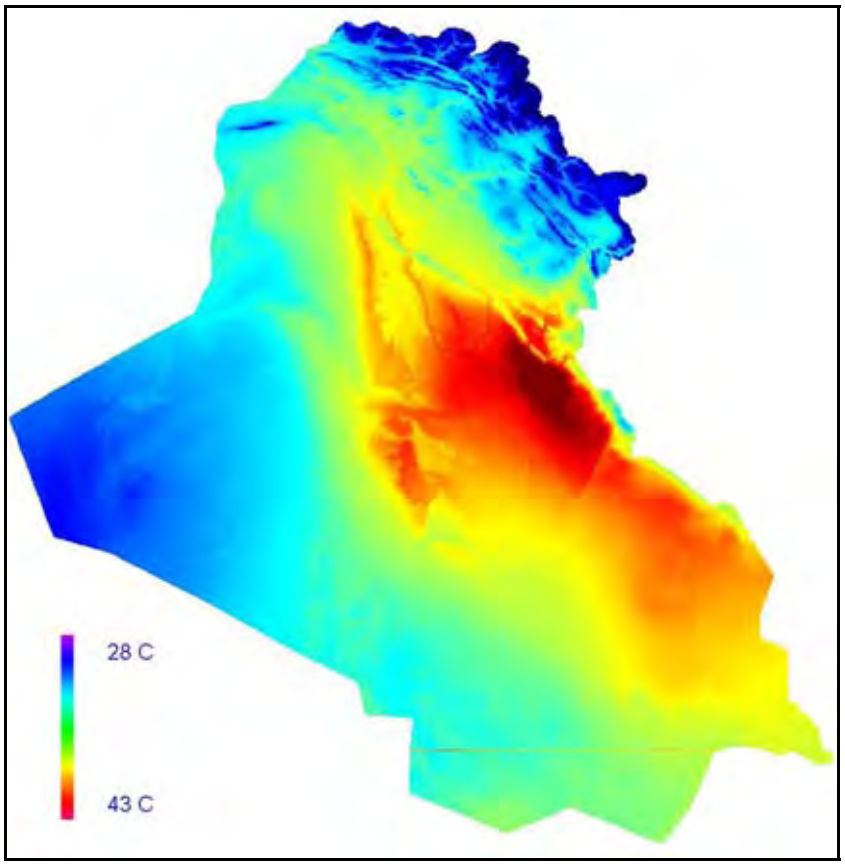
Number	Facility name	Governorate	Type
1	Taji	Baghdad	Silo
2	Dora	Baghdad	Silo
3	Rasafa	Baghdad	Silo
4	Utayfiyah	Baghdad	Silo
5	Basrah	Basrah	Silo
6	Um Qasr	Basrah	Silo
7	Diwaniyah	Qadissiyah	Silo
8	Diwaniyah (Rice)	Qadissiyah	Silo
9	Shamiya	Qadissiyah	Silo
10	Nassiriyah	Thi-Qar	Silo
11	Rafai	Thi-Qar	Silo
12	Babylon (Rice)	Babylon	Silo
13	Babylon	Babylon	Silo
14	Najaf	Najaf	Silo
15	Kufa	Najaf	Silo
16	Kirkuk	Tameem	Silo
17	Samawa	Muthanna	Silo
18	Amarah (Rice)	Missan	Silo
19	Amarah	Missan	Silo
20	Kut	Wassit	Silo
21	Suwayra	Wassit	Silo
22	Mosul	Ninewa	Silo
23	Shekhan	Ninewa	Silo
24	Al Shargat	Ninewa	Silo
25	Tal Afar	Ninewa	Silo
26	Sinjar	Ninewa	Silo
27	Rabeea	Ninewa	Silo
28	Mosul Open Area	Ninewa	Open Storage
29	Sarmaya Open Area	Ninewa	Open Storage
30	Kerbala	Kerbala	Silo
31	Ba'quba	Diyala	Silo
32	Ramadi Silo	Anbar	Silo
33	Tuz	Salah al-Din	Silo
34	Tikrit	Salah al-Din	Silo
35	Samarra Open Area	Salah al-Din	Open Storage
	Khan Dari Silo	Baghdad	Silo
	Ras Bani Saad	Diyala	Silo
	Abu Shakir (Rice)	Najaf	Silo
	Baaj	Ninewa	Silo
	[illegible]	Ninewa	Silo
	Makhmour	Ninewa	Silo
	Faida	Ninewa	Silo
	Wady Ugab Complex	Ninewa	Silo
	Al Gaiyara Complex	Ninewa	Silo
	Qusriyah Complex	Ninewa	Silo
	Al Rigat Open Compl	Tameem	Open Storage
	Kut Open Area	Wassit	Open Storage


Land Use
Woodland/forest
Meadows and pastures (sheep and cattle)
Arable land
Irrigated farming
Rough grazing/ nomadic herding
Wasteland
Governorate boundary
0 100 Kilometers
0 100 Miles
Dihok
Mosul
Arbil
Ninawa
Kirkuk
As Sulaymaniyah
At Ta'mim
Bayji
Tikrit
Salah ad Din
Samarra'
Diyala
Ba'qubah
BAGHDAD
Ar Ramadi
Ar Rutbah
De Facto Boundary
Al Anbar
Karbala'
Al Hillah
Al Kut
Wasit
Ad Diwaniyah
Maysan
Al 'Amarah
An Nukhayb
An Najaf
As Samawah
An Nasiriyah
Al Basrah
Al Muthanna
Boundary representation is not necessarily authoritative.
Barley
Cotton
Dates
Rice
Vegetables
Wheat
761866AI 1-03

Land Use



Land Use Zones



Average Maximum July Temperature

Dryland Demonstration Field, Moderate Rainfall

Dryland Demonstration Field, Low Rainfall

IPA-99 Crop Demonstration Field in Tarmiya

IPA-95 in Farmer's Own Field in Tarmiya

Salt Tolerant H6 Variety – Demonstration on Saline Land in Diwaniya

IPA-99 Variety on Farmer's Own Saline Land in Diwaniya

Mosul Demonstration Supplemental Irrigation IPA-99 Without Herbicides Applied

Same as above with Herbicides Applied

ANNEX 6

IMPROVING RURAL LIVELIHOODS: COMMERCIALIZING SMALL-SCALE SHEEP PRODUCTION IN IRAQ

TABLE OF CONTENTS

IMPROVING RURAL LIVELIHOODS: COMMERCIALIZING SMALL-SCALE SHEEP PRODUCTION IN IRAQ

BACKGROUND

Livestock play an important role in the lives of Iraqi farm families. Much of small-holder family income currently is derived from the sale of livestock. Within the livestock sector, the sheep sub-sector is considered to be the most economically important. Estimates for 2003 indicate there are almost 7 million and around 4 million sheep over two-years old in the Central/South and North respectively. Central flocks are reportedly small with ten sheep per household on average. Northern flocks are larger with estimates of between 200 and 5,000 per family, although observation verifies there are smaller flocks of around 20.

PILOT PROGRAM GOAL AND OBJECTIVE

The goal of the program is to double offtake and commercialize small-scale sheep production in Iraq, reorganizing and retooling small-scale producers and Ministry of Agriculture/Agriculture College researchers and extensionists to support and promote the process of doing so.

The objective of the program is to develop and test a demonstration pilot program that will result in the following:

- Increased sheep production primarily for export but also for consumption and/or domestic sale;
- Increased small-holder farmer incomes;
- Enhanced rural employment opportunities;
- Improved capacity of producer groups to compete in commercial sheep markets; and
- Improved system for the generation and delivery of adoptable technologies.

RATIONALE

Over the next years, agriculture in Iraq will need to transition from a highly-subsidized centrally-planned sector to one that is market-led. How this transition can occur while simultaneously improving livelihoods of farm families in the small-scale agriculture sector has yet to be determined. The pilot program is designed to support this transition and explore ways and means to ensure the viability of the small-scale sector.

The price of live sheep in neighboring countries is consistently reported to be higher than the price in Iraq. This suggests there is an export market to exploit. Improving sheep farms offers opportunities to strengthen smallholder farmers' relative position in the transition to a market-led economy. In addition, it is one potentially economically viable activity in which farm household women may well participate. Finally, there may be opportunity for inter-regional cooperation, as summer is a time of relatively plentiful feed in the north, with winter a time of more plentiful feed in the south.

POLICY ISSUES

In support of this pilot program, a critical policy issue needs to be resolved. Because of longstanding decline of the national herd, Iraq has placed an export ban on sales of female sheep. There appear to be two underlying rationales for this policy. The first centers on maintaining the national flock and the second focuses on ensuring the availability of affordable meat for the domestic market. Even though this policy is put forward as having been crafted for an emergency situation, there is a long history of embargoes on food products in Iraq. As fuller examination and deeper understanding of the potential supply response from an increase in price—assuming that the factors of production are under the control of sheep farmers—is achieved, the rationale for export bans will weaken. Without clear assurance of an export market, this pilot project will deliver far less benefit to Iraq and to Iraqi sheep farmers. Having potentially less impact, but still to be considered, is the policy on slaughter of female sheep.

DESCRIPTION

The pilot will be carried-out in Wassit and Sulaymaniyah Governorates. Both are important centers of agriculture production, preliminary field-work has been carried-out in the former and both areas are relatively secure. The latter increases the likelihood that program implementation can and will go forward.

The pilot targets farm families, technologies, facilities and equipment, export certification and staff as these relate to doubling and commercializing sheep production.

Farm Families

Producer groups will be strengthened or established to enable farm families to compete in a market-led economy. Program activities will focus on the farm family as a method for establishing contact with both men and women and as a method for engaging both men and women in program and producer group activities. In addition, a target of 20% women producer groups will be set to ensure women are reached via the program. Producer group members' knowledge, skills and attitudes will be assessed and specific focused training developed and delivered to bridge the gap between current and necessary knowledge, skills

and attitudes. The Program will establish a Young Farmers Scholarship Fund so that selected farm family youth can earn their secondary school diploma or a College degree.

Technologies

New and improved animal and crop technologies will be developed and disseminated to farm families, via organized producer groups. Technologies will increase the number and offtake of family flocks and tackle the issue of purchase of supplementary feed. The sheep production system relies on extensive grazing and supplementary feeding. Supplementary feeds are typically barley, though sometimes wheat, or their by-products. On mixed-farms in the Central/South, farmers either use their own or they purchase grain for supplementary feeding. In the North, the pastoralists purchase grain for supplementary feeding. Thus, the system is cash-based. Ways to increase cash efficiencies will be deliberated in the development of technologies. Several example technologies to be developed and supported under the program are highlighted below.

Breed Improvement Technologies. This would include, for example, cross-breeding with pure-breed stock and using local breeds selected for quality.

Nutrition-Improving Technologies. Such technologies would focus on improved seeds for forage production, alternative food and fodder crop rotations, identification of non-conventional feeds, systems of migratory herding and improved mineral supplements.

Animal health improvement technologies. This would include an inventory of major local parasite and disease problems, diagnosis, preventions and treatment; identification and assessment of new medicines, treatments; and vaccines; improved treatment methods such as improved dip tanks; and system for timely provision of veterinary medicines.

Improved management technologies. These technologies would support best management practices and would include simple record-keeping books, daily/weekly check-lists for animal care, individual animal production records, sheep health management calendars and cropping schedules.

Facilities and Equipment

The program will examine veterinary, research, extension and training facilities and equipment to determine areas where program investments in facilities renovation or upgrading and/or equipment will be of most benefit. Investments will be based on greatest benefit to farm families. Experimental Extension Communications and Materials Development Units will be funded at the governorate-level to ensure educational messages

and materials are readily available for use by farmers and agents. In pilot areas, the program will construct and equip producer group meeting buildings so that producers have an office, meeting and training facility. Grants will be provided producer groups to purchase essential equipment that can be shared such as trucks for transporting sheep to market and sheering sheds/equipment. If appropriate facilities for breeding stations are not available, the program will establish breeding stations with cross-breeding facility and local quality stock through an outsourcing mechanism. Start-up support will be provided to private sector individuals/groups for facilities to produce mineral supplements.

Export Certification

Effective quarantine stations at border crossing points convenient for the export of live sheep, destined for neighboring countries celebrating religious holidays, will be re-established. Support for these stations is included in the Facility Rehabilitation component of the Transition Plan. The re-opening of the quarantine stations will facilitate export sales—along with helping to acquire the necessary export licenses—and ensure that Iraq animals are free from disease.

Staff

Where there are no women extension agents, women agriculture engineers will be recruited under the program to work in the pilot program at the field-level. A multi-tiered program to retool Ministry of Agriculture National, Governorate and Agriculture Section level staff will be funded. At the national-level, specialists in selected areas will receive external degrees. At the governorate-level, research and extension staff will receive targeted focused short-course field-based training on specific subjects critical to their capacity to support the commercialization of small-scale sheep production. At the Agriculture Section level, extension agents and others, such as Area Specialists, will be retrained to provide team-based grass-roots implementation of the pilot program. These teams will also include para-professional farmer extension agents from producer groups who will also receive training. As needed, options for transport for field-level staff will be developed and supported under the program as will the inclusion of graduate students in governorate and/or field-level teams.

ORGANIZATION

As discussed in the body of this Plan, the Sheep Production Program will be directed from within the Ministry of Agriculture in Baghdad and in Sulaymaniyah and the Colleges of Agriculture in these two Governorates. There are three levels of organization. Emphasis will be given to the participation of representatives of producer groups at each level.

A **National-Level Working Group** will be established and composed of Ministry personnel from the Central/South and North. This will include representatives, for example, from:

- Veterinary and Animal Resources Services;
- Research, Extension and Farmer Training;
- Colleges of Agriculture;
- Producers/Groups; and
- Governorate Research and Extension.

As well, a newly-recruited Research-Extension Liaison Officer (RELO) will sit on the National-Level Working Group and act as Program Manager of the National Secretariat.

The National Working Group will charter a National Secretariat. The Secretariat will be managed by the RELO and will include monitoring and evaluation personnel as well as administrative staff provided by a donor project. The Secretariat will link all members of the program; collect and disseminate information; and publish regular monitoring and evaluation reports.

Two **Governorate-Level Task Forces** will be established. Members will include the governorate-level staff participating in the National Working Group, other governorate-level Directorate experts in animal health and nutrition, forage crops, farmer training, representatives from farm families and a governorate-level RELO. A Ministry appointee will chair the Task Force. The RELO will liaise between researchers, extensionists and farmers as well as between the national working group and field-level teams. At the Governorate and field-levels, the Task Force and RELO will guide the implementation of national-level directives.

Field-Level Implementation Teams will be established to include a mix of those in the Task Force, from the Agriculture Section staff and farmer representatives as well as para-professional farmer extension agents from producer groups. The implementation team will be trained to implement the program at the field-level directly with farm families. As importantly, the Field Team will be trained to convey problems and progress up the system to the national-level.

COMPONENTS

The Pilot Program has five components. These are: situation analysis; market development; producer group development; agriculture staff capacity building; and technology development, adaptation, transfer and adoption.

Component 1: Situation Analysis.

The objective of Component 1 is a) to add to the knowledge base on the sheep and sheep production systems in the northern and in the central/southern regions and b) to document system similarities and differences.

A participatory rapid rural appraisal (PRRA) exercise will be carried-out to more fully understand the systems and to engage research, extension and most particularly, farmers in a collaborative activity. PRRA will be carried-out with farmers using focus group interviews, key informants, farm walks and observation. As well, case studies will be developed. Critical questions to answer include: What are farmers priorities and objectives for keeping animals? Are they kept primarily for milk, meat, hides/skins, fibers and/or manure? What is the age and sex structure of the flock? Who cares for—feeds, waters, herds, guards—animals? What are animals fed and when? What are the sources and costs of animal feed? What veterinarian or other health care do animals typically receive, from whom and where? What breeds are available and what are farmers' criteria for assessing breeds? Who breeds animals, where, when and how? When is lambing season and who is responsible for care of ewes and lambs? Who sells which animals and why? Who retains profits from selling animals? What constraints do farmers currently encounter in raising and selling their sheep?

Component 2: Market Development

The objective of Component 2 is a) to identify profitable sheep products and markets and b) to develop strategies for successfully marketing products.

A market study will be conducted to identify the relative value of products (e.g., milk, meat, hides/skins, wool and products of value added processes) and current and future markets for various products. Age, categories and sex of animals marketed; relationship between age and weight; market locations and destination of animals sold; and the role of intermediaries will be examined. Based on findings, a gap analysis between what is currently available and what is needed to successfully market sheep will be conducted. A strategy for ways/means to address gaps and market various products will be developed. Ways to disseminate market information to producers will be explored. For example, the feasibility of a village-based internet kiosk system to receive marketing and other information, run by a trained local villager, will be examined.

Results of the market study will also be used as input into the Technology components so that technology and practices developed will reflect needs and priorities of the potential markets. Results will also provide input into the development of marketing short-course(s) for various audiences to be designed under this component.

Component 3: Small-Scale Sheep Producer Group Development.

The objective of Component 3 is to develop small-scale sheep producer groups to enable members to successfully compete in commercial sheep markets.

Well-organized, market-oriented, small-scale producer groups are critical to the success of the pilot program. The achievements of commercializing sheep operations for smallholders will be highly contingent on the extent of commitment to the effort by producer group

members, the capacity of producer groups to move the effort forward and the power of producer groups to effectively mobilize farmers to act in concert.

Under this component, sub-groups of existing farmer groups or new specialty sheep-producer groups will be organized. Group organization and development will be carried-out initially so that groups can effectively participate in and help guide the pilot program and ultimately so that producers' power to engage in commercial marketing is increased. The producer groups will function as collection centers for sheep products so that a viable economy of scale can be achieved.

The Sheep Producer Group Development component has several sub-components: a) identification and assessment of existing organizations, b) organizational set-up or reorganization, c) on-going training for members, d) gender targeting, e) Young Farmer Helping Hand Program and f) a grants program.

a) Identification and Assessment of Existing Organizations. This sub-component will inventory existing organizations and assess their status. Elements to be assessed will include, for example, legal framework, facilities, organizational capacity, electoral process, quality of leadership and level of activity of membership. Findings of the assessment will be used to fine-tune the process of further developing the organizations.

b) Organizational Set-Up or Reorganization. This sub-component assists groups (existing or new) to establish themselves as legitimate institutions including setting-up or reviewing their formal institutional framework (legal, leadership, elections, membership, finances and activities). As well, it emphasizes formulating systems to enable groups to obtain and sell inputs at cost and market at a profit. These activities will be further supported through on-going training discussed below.

c) Ongoing Training. This component strengthens member skills in both technical and process areas related to commercializing sheep production. As noted earlier, farmers' knowledge, skills and attitudes will be assessed and specific focused training developed and delivered to bridge the gap between current and necessary knowledge, skills and attitudes. For example, hands-on practical training in technical areas of sheep breeding, disease identification and treatment, flock management, crop and fodder production systems will be provided as will training in process areas such as producer group development, problem solving, business and financial planning, bookkeeping, marketing and participatory monitoring and evaluation. To the extent possible, training will be taken to farmers and held at field locations as compared to farmers traveling to urban centers.

d) Gender Targeting. To target interventions towards the appropriate group, a gender analysis of sheep production to determine roles, responsibilities and benefits will be carried-out. Findings will be used as input to component development. A target of 20 percent will be set for women producer groups. Ways and means to encourage women to participate in mixed farmer groups will be identified and implemented. Where there are no women extension agents, women agriculture engineers will be recruited under the program to assist with these sets of activities.

e) Young Farmer Helping Hand Program. The program will provide young farmers, selected by producer group members, with start-up animals so they can begin to establish themselves as producers.

f) Grants Program. The Grants Program aims at empowering producer groups by changing the traditional direction of the flow of grant funds. Traditionally, funds are provided institutions who then, in turn, provide services to farmers. The Grant Program will provide certain grant funds to farmers who will then contract services from institutions. The Grants Program will stimulate group identification of priority needs and ways to meet needs. It will provide groups with practice in accessing and being accountable for grant funds.

While the parameters for the Grants Program will need to be further established, four types of grants are envisioned. These are 1) Producer Group Grants to operate and strengthen individual producer groups, 2) Look and Learn Grants to fund visits to farm fields, to research stations, to other areas offering educational advantage, 3) Para-Farmer Extension Agent Grants to pay stipends to group selected farmers who act as para-professional farmer extension agents and 4) On-Farm Research and Demonstration Grants to collaboratively with farmers, researchers and extensionists a) plan and fund on-farm adaptive research and/or b) establish on-farm methods and results demonstrations.

Component 4: Agriculture Staff Capacity Building.

The objective of Component 4 is to build selected governorate and agriculture section staff capacity to implement the program and successfully work directly with farm families in the technology development, adaptation, transfer and adoption process.

Under this component, agriculture staff will be provided with educational tools needed to carry-out pilot program work. A Training Needs Assessment will be conducted to determine specific areas where staff knowledge, skills and attitudes need to be strengthened. These are likely to include: training in their role in the pilot program; in Situation Analysis and Participatory Rapid Rural Appraisal; in the processes of technology development, adaptation (including on-farm testing), transfer and adoption; in extension message and materials development; in adult education, training-of-trainers and farmer training; in extension methods (agriculture fairs, method and result demonstrations, field days, farmer to farmer visits); and in participatory monitoring and evaluation. In addition, agriculture staff will be trained in the new sheep production and management system technologies that will be developed under the program so they can effectively engage farmers in learning about and trying out these technologies and practices. This training will be hands-on, field-based and practical. Para-professional farmer extension agents will be included in these trainings.

Component 5: Technology Development, Adaptation, Transfer and Adoption.

The objective of Component 5 is to develop and test a producer-research-extension linked system to develop, adapt, transfer and adopt Small-Scale Commercial Sheep Production Best Practices Management Systems. These Systems will improve the quality and quantity of sheep flocks through improvements related to genetics, nutrition and health.

Technology Development and Adaptation. Both the process and the products of technology development and adaptation are discussed below.

The Process

All those involved with the development of the Best Practices Management Systems, referred to here as technology, will attend a start-up Workshop on the factors influencing the adoption of innovations. This is so these factors can be built in, at least considered, in the overall technology development process. There is a theoretical correlation between these factors and the rate and extent of adoption. The factors are commonly held to be: 1

Relative advantage: The extent to which the technology is better than that which it replaces. The rate and extent of adoption increases as relative advantage increases. Better can mean, for example, economically more viable, labor saving, or having higher status. The criteria for better needs will be set through an understanding of the market and most particularly, by producers themselves. Thus, a breeding program should consider the extent to which new breeds and/or cross-breeds are better (e.g., healthier, heavier) than the breed it replaces. Changes in cropping systems to include fodder production should consider the extent to which these changes are better (e.g., for the soil, for increased production, for animal nutrition, for drought tolerance) than that which it replaces.

Observability: The extent to which others can see the technology, how it works and its consequences. The rate and extent of adoption increases as observability increases. Two ways to build in observability include using demonstrations of time-sensitive practices and holding producer to producer meetings. In the longer term, producers should be able to readily see the differences between the results of improved practices and current practices.

Compatibility: The extent to which the technology is consistent with the values, past experiences and needs of the adopters. The rate and extent of adoption increases as compatibility increases. This is one of the more difficult factors that affects adoption. For example, if a new breed of ram is introduced that throws large lambs, the local smaller size ewes will have great difficulty delivering them. The new technology must consider the existing system.

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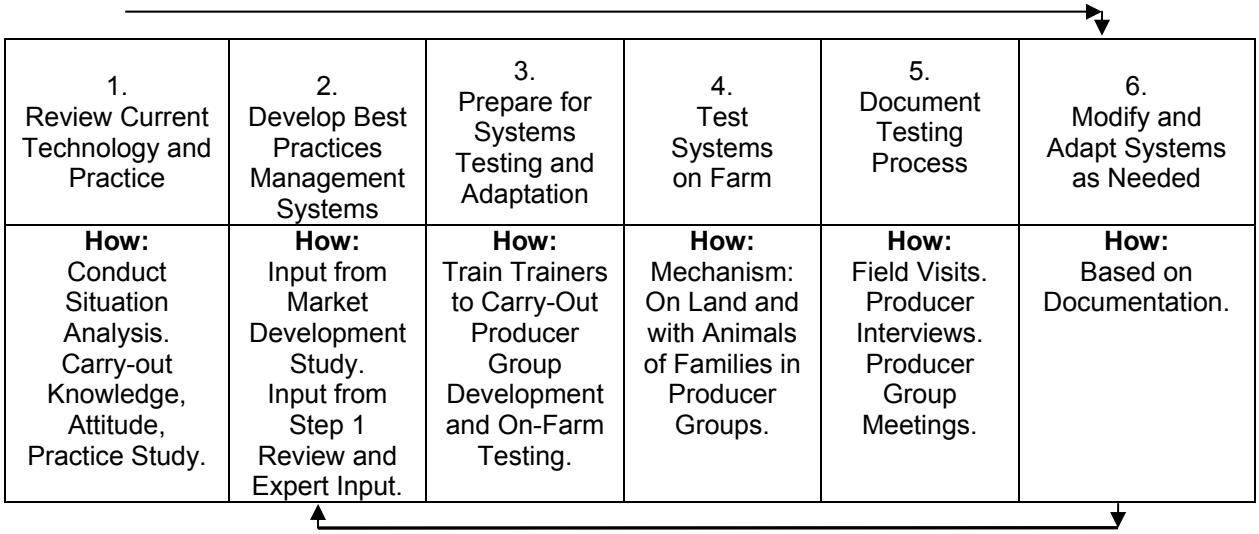
[1] This discussion is based on E. Roger's work on the diffusion of innovations. The term "technology" is used here rather than "innovation", the term typically used in adoption discussions. In this case, the technology is the best practices management systems to be developed. These may be considered as "innovations".

Complexity: The extent to which the technology is easily understood, used and maintained. The rate and extent of adoption increases as complexity decreases. The message here for the pilot program is to start with a relatively few, relatively simple, improvements that show relatively fast results. The quantity and complexity of improvements can increase over time.

Trialability: The extent to which the technology can be tried out on a limited basis. The rate and extent of adoption increases as trialability increases. The extent to which small-holders have to commit to the production of sheep on a small to large scale needs to be considered. This is essentially an issue of risk. Small-holders may not be able to afford very much risk. The introduction of change into their system should, to the extent possible, be gradual and scaled to their capacity to integrate changes.

A process approach, such as outlined in Figure 1 below, will be applied to develop and adapt technology. Although depicted as linear, the development of technology and systems is an iterative process.

Figure 1. Technology Development and Adaptation Process



The Product

Technology (Best Practices Management Systems) will focus on:

- Improving the quality of the products;
- Increasing the quantity of products sent to market; and
- Reducing the cost per unit sold.

This will be accomplished through improvements in flock genetics, nutrition and health.

Genetics. A Strength, Weaknesses, Opportunities and Threats (SWOT) analysis of existing breeds will be carried-out. This provides data for the comparison between what is being

raised and what improvements may need to be made through a breeding program. To provide detail to the factors influencing adoption mentioned above, factors to consider in breed improvement are: faster rate of growth, heavier market weight, lower cost per unit of meat, better quality meat, wool quality, milk production and compatibility with existing stock. For the latter, breeding for twin-bearing ewes may or may not be advisable.

Nutrition. Improved feed sources and systems will need to be developed along with provision for supplements as needed. Systems of crop and pasture rotation need also be designed. Interplanting barley and vetch, for example, would improve soil fertility and provide forage, as well as cut and carry green feed for animals.

Health. The diseases and parasites affecting flocks in Iraq are numerous. A program of hygienic management, vaccinations, dips and or drenches needs to be designed. Developing farmer skills in this area is critical so they can, at a minimum, diagnose common diseases/parasites and treat common diseases/parasites. In this context, the availability and supply of veterinary supplies and services will be investigated and mechanisms for delivery developed.

The new technologies developed will be tested on producer farms with producer animals. The technologies will be modified and adapted to the special conditions of farmers' fields through this testing process.

Technology Transfer and Adoption. The field-level teams of redeployed and retrained agricultural section staff will take the lead in technology transfer and adoption. They will be backstopped by those at governorate and national-levels. In essence, field teams need an understanding of what their job is and the motivation, capacity, equipment, materials and supervision to carry-out their jobs. More specifically, they will need:

- Transport to get to the field to visit farmers and
- Extension messages and educational materials to support the messages.

Provision is made for both these under the program. Extension messages will be derived from the new technologies developed under the program. Supporting educational materials (e.g., posters, pamphlets, leaflets, illustrated guidelines, pictures) will be produced in the Communications and Materials Units. Field-teams will be trained in both the messages and their delivery.

An experimental feature of the program is the use of para-professional farmer extension agents. They will be selected by producer groups and paid a stipend under the program. They will be included in all field-based training activities and will work directly with others in their producer group to encourage the adaptation and adoption of the new technologies developed.

SCOPE

The pilot program will be tested in one District or Sub-District in Wassit and one District or Sub-District in Sulaymaniyah. It will be piloted with a minimum of four and a maximum of eight producer groups per District/Sub-District. Producer groups will have a minimum of 15 and a maximum of 30 members.

DESIGN

As with the other programs discussed in the body of this Plan, the further design of the program will be carried-out by a Design Committee of the National Working Group assisted by a representative of the funding donor. The design must consider where and how the increased offtake will be sold and ensure that the production program is appropriate for the intended markets. This must include explicit actions to address existing restrictions and mindset of some Ministry staff against the export of live female sheep. The design will need to identify the overall indicators of success, one of which is likely to be: farmer adoption of improved technologies and practices for commercializing small-scale sheep production. The Design Committee will further detail the specific actions to be taken and identify the responsible parties. The Committee will also prepare a budget for the first calendar year, so that once completed, the design can be reviewed and approved by the donor. Both the design and the budget should be updated every six months so that possibilities not previously considered, can be added to the Program, or failures removed.

Again, as with the other programs, there will be no overall amount to be expended for this program. Rather, a budget will be generated for specific activities, approved and actions implemented. The Monitoring and Evaluation Team will report on inputs/outputs and program success against the indicators established as the program begins. The donor will review progress and approve advance funding for each six months so that there is a rolling six-month design with a budget. This will allow for changes in program emphasis and the addition of new activities as needed that are defined, budgeted and assigned indicators of success.

IMPLEMENTATION SCHEDULE

The implementation schedule is outlined in Table 1 following.

Table 1: Sheep Production Program Implementation Schedule

Activity	Months	Dates
Establishing Organizational Structure (Working Group, Task Force, Field Teams). Finalizing Program Design. Training Task Force and Field Teams.	2	June-July 04
Conducting Studies: 1) Situation Analysis; 2) Knowledge, Attitudes and Practice; 3) Gender Analysis; and 4) Market Development. Workshops to Review Study Findings.	2	Aug-Sept 04
Building Agriculture Staff Capacity. Organizing/Training Sheep Producer Groups.	2	Oct-Nov 04
Developing Technologies: Best Practices Management Systems. Training for On-Farm Testing of Technologies Developed.	2	Dec 04-Jan 05
On-Farm Testing of Technologies. Documenting Testing Process.	5	Feb-June 05
Modifying and Adapting Technologies.	6	July-Dec 05
Formative Evaluation.	1	Jan 06
Setting-Up Unit and Preparing Extension Messages and Materials	1	Feb 06
Preparing Teams for Expansion.	2	March-Apr 06
Expansion to other Producers in Pilot, Dahuk, & Babylon Governorates: Establishing/Training Groups, Transferring Technologies to New Groups.	6	May-Oct 06
Formative Evaluation.	1	Nov 06
Program Roll-Out Development and Preparation.	2	Dec 06-Jan 07
Expansion to 9 Governorates[2] (3 teams, each team 3 Governorates)	6	Feb-July 07
Summative Evaluation	2	Aug-Sept 07

CONTEXT

The pilot program will initially be carried-out in Wassit and Sulaymaniyah. The sheep production system in the two places is similar in that it is generally based on cereals, cereal by-products and grazing. There are also differences. In the South, flocks range less widely than in the North where the pastoralist tradition reigns. Additionally, on mixed-farms in the Central/South, farmers either use their own or they purchase grain for supplementary feeding. In the North, the pastoralists purchase grain for supplementary feeding.

The currently available, pertinent information on the pilot areas is given below.

Wassit Governorate

Wassit is located in South Central Iraq in the Tigris-Euphrates valley. The Tigris runs through the Governorate from West to East. 1997 data indicate a total population of around 785,000 with 53 percent and 47 percent distribution between the urban and rural areas respectively.[3] Wassit has a total of 17 administrative units, that is, 6 districts and 11 sub-districts.

[2] Erbil, Qadissiya, Thi-Qar, Missan, Basrah, Ninewa, Salah al-Din, Diyala and Tameem.
[3] The estimated population for the year 2000 was around 940,000.

Of Wassit's total land area of around 1.7 million ha, about .7 million ha are considered arable. Primary winter crops include wheat and barley. Spring/summer crops are sunflower, maize, cotton and summer vegetables. Date palm and other fruit orchard crops figure in Wassit's agriculture product mix. Limited information is available on the livestock sector. However, it is clear that small-holder farm families raise sheep, goats, chickens and cows. Estimates are that small-holder families have an average of 10 sheep, 5 goats, 10-15 chickens and 2 cows.

Rural women in Wassit confirm what can be readily observed. There is room for much improvement in the livestock flocks and herds that are seen in the countryside. Additionally, discussion suggests much of rural family cash comes from selling livestock, including sheep. Thus, improving family livestock would likely increase family income.

Farmer Groups. There are branches of the national-level General Union of Iraqi Farmer Societies (GUFS) in Wassit. The Chief of Wassit Farmer Societies advises there are 63 Societies throughout the Governorate, representing 137,000 farmers. According to the leadership, elections were held following the fall of Saddam and thus, in large part, the leadership of the Society was changed. In addition, Society leaders advise they need assistance to reorganize and determine their new role in the post-Saddam area. Whether there are also other organized farmer groups, associations and/or cooperatives in Wassit has yet to be determined.

Directorate of Agriculture. There are essentially four tiers of organization within the Ministry of Agriculture (MOA) structure. The first is at the national-level, earlier discussed in this Plan. The second and third are at the governorate-level. The fourth is at the Agriculture Section-level. Figure 2 following provides a draft organigram of the four tiers. Tiers two to four are further discussed below.

At the governorate level there is a Directorate of Agriculture (DOA) as well as governorate-level State Owned Enterprises (SOE) and State Boards (SB). Also at the governorate level, there are the various sections under the DOA. These sections are again repeated at the final-level, the Agriculture Section level. Agriculture Sections are the same geographically as the Governorate Districts/Sub-Districts. The front-line Agriculture Extension Agents, who interact directly with farmers, are physically located at the Agriculture Section level. As well, there are various other staff with differing areas of responsibility including "Area Specialists" who are responsible for a specific geographical area within the Section.

Rough estimates suggest there are upwards of 300 staff in the DOA. However, staff have had scarce opportunity to upgrade their skills and learn new approaches to agriculture development. With the exception of the DOA Central Office in Kut, Wassit, which is being rehabilitated, most facilities of the Directorate are in very poor condition due to neglect and/or looting. From management to computing, there are few systems in place and those in place need to be strengthened.

Agriculture Section Staff. Recent data indicate there are a total of 161 technical staff at the 16 Agriculture Sections in Wassit. The range is between 6 technical staff in Sheikh Sa'ad Sub-District and 18 in Al Kut District with an average of 10 per Section. Thus, not all Agriculture Sections have the full complement of posts shown on the organigram in Figure 2.

The average age of the 161 technical staff is just over 46. The majority of about 60% have finished 12 years of education (high school) while about 30% have completed 16 years of education (College/University Bachelor's Degree). The remaining 10% have finished less than 12 or more than 16 years of education. On average, staff have been in their posts for almost 21 years. They have an average of 12 years experience in their current area of expertise and an average of 21 years experience in the agriculture sector in general.

There are 16 agriculture extension agents, one in each section. They are assigned responsibility for agriculture extension. They indicate the important problems they face in carrying-out their extension work include: lack of transportation; lack of demonstration areas and other places to conduct extension training/activities; and lack of educational materials.

The responsibilities of those located in the other posts at the agriculture section level have yet to be determined. It appears those responsible for a given area previously performed highly regulatory functions are very familiar with farm operations at the farm level. The challenge will be how to best deploy these staff in the transition to a market-led economy.

Sulaymaniyah Governorate

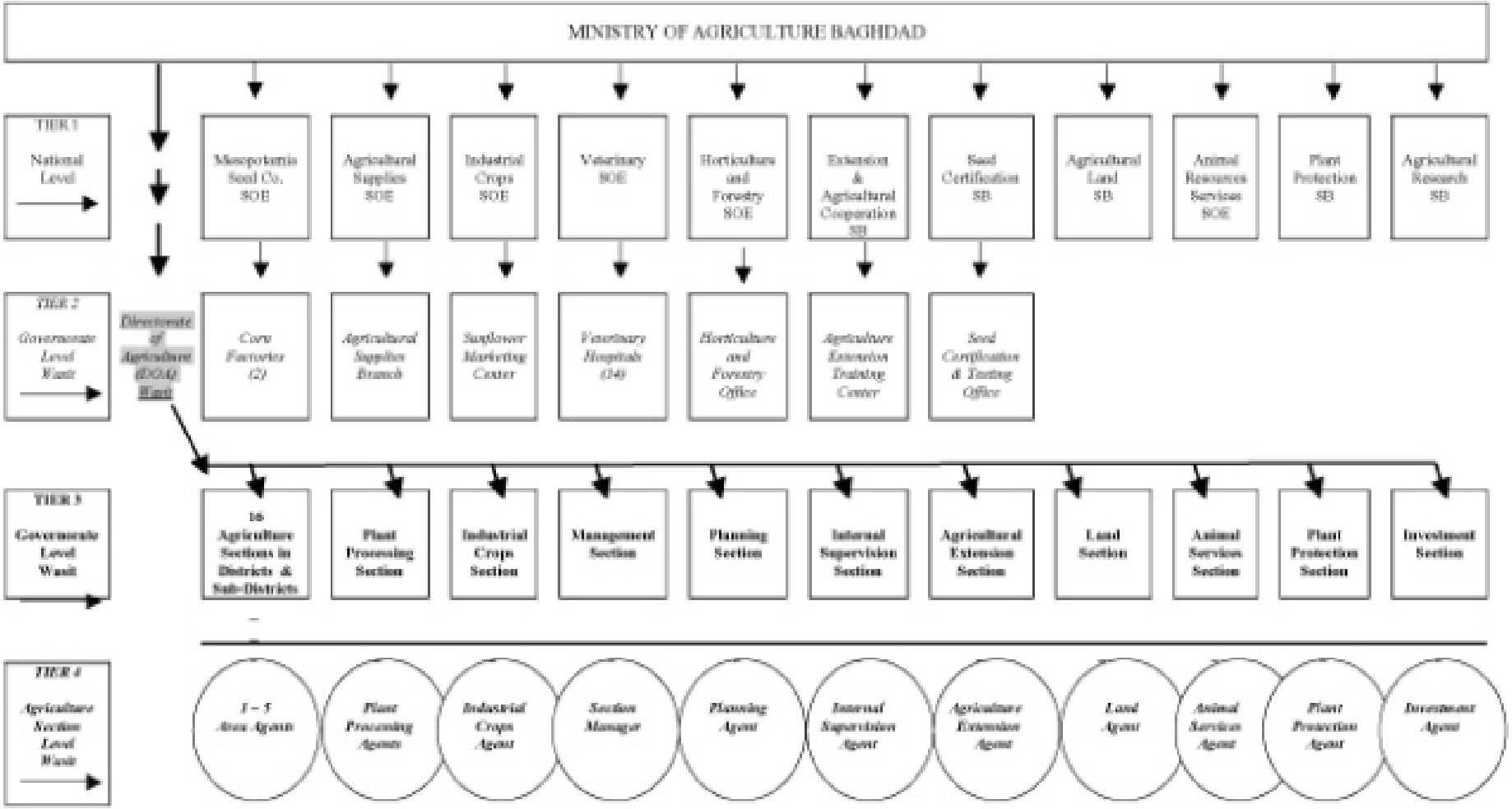
Specific current information on Sulaymaniyah is very limited. However, the sheep production and institutional systems are similar in nature to other northern governorates further described below.

The sheep production system is basically pastoral and traditional, although certain improved practices have been introduced. Certain tribes have herded sheep for generations and apparently continue to do so. One family may own between 200 and 4,000 sheep. Large flock owners will hire shepherds for the summer mountain range.

Sheep range free in the northern regions and are moved between summer mountain and winter valley pastures. Sheep are moved up to mountain pastures during summer as there is little rain and thus limited forage in the valley. Also, there are other sources of water in the mountains. During winter, food sources are more abundant in the valleys. This, along with cold mountain temperatures, precipitates the move back to the valley. There is a shortage of forage in winter and sheep exit winter season very lean.

Figure 2: Draft Organigram: Ministry of Agriculture and Wassit Directorate of Agriculture

Tier 1: National Level State-Owned Companies (SOE) and State Boards (SB).
Tier 2: Governorate Level Directorate of Agriculture (DOA), SOE, SB.
Tier 3 Governorate Level under DOA.
Tier 4: Agriculture Section-Level under DOA.



Sheep are sold primarily for meat. There is virtually no milk nor milk products industry, though there is some Kurdish cheese made for the local market. Wool is sometimes sold, but it is of low quality. Although raising goats is easier than raising sheep, Kurdish people reportedly prefer lamb and mutton over goat meat. There is one type of goat, the merez, that has special wool used to make Kurdish coats.

Sheep flocks are largely local breed animals. The local breeds, all fat-tailed sheep, are Hamaani, Karadi and Awasii. The former originating from Iran and the latter considered an Arabian breed which are also the local breed in the South.

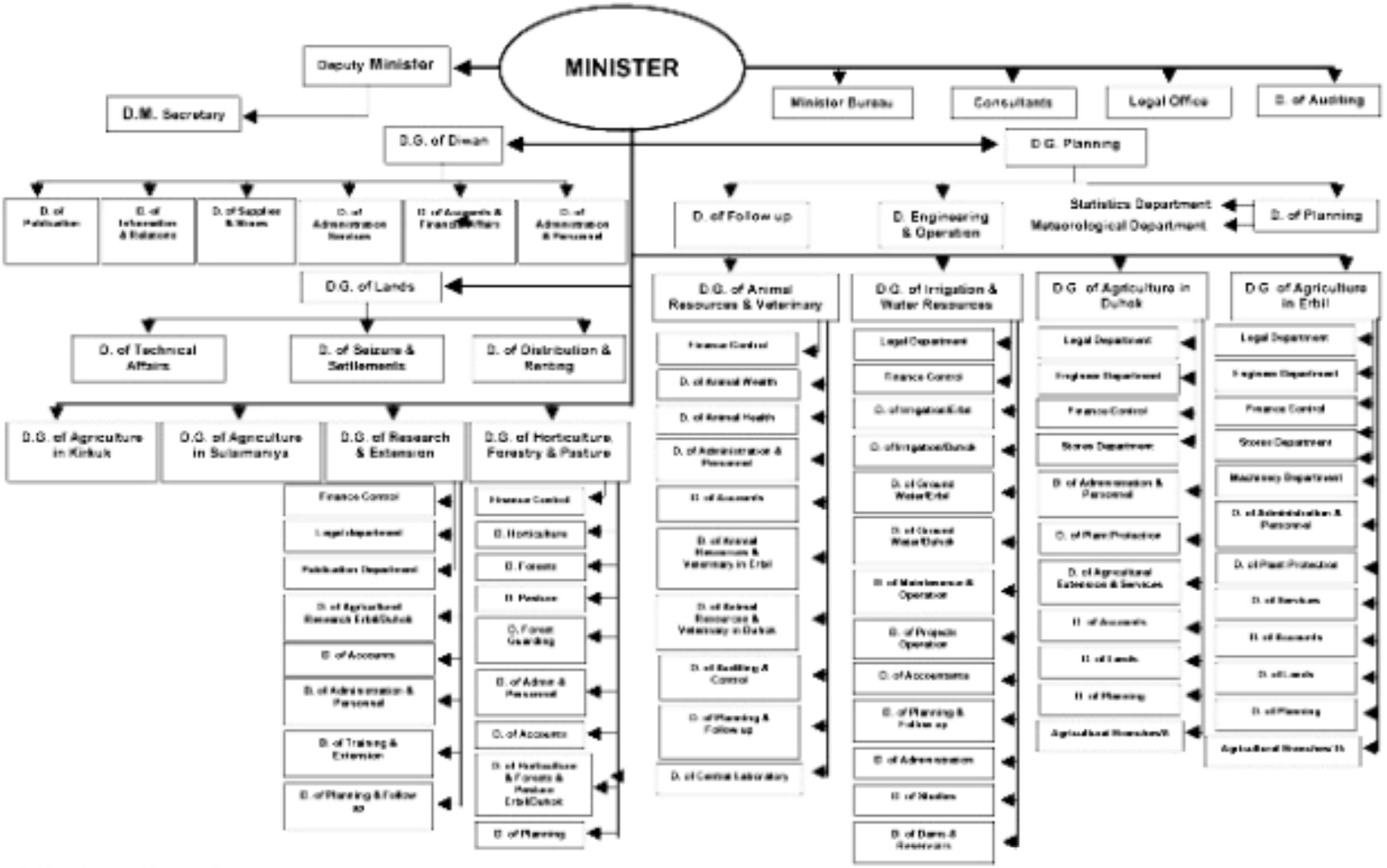
The Directorate General (DG) of Animal Health and Veterinary Services has a record-keeping system, implemented by the Veterinary Clinics in each of the Districts/Sub-Districts, whereby animal vaccinations are recorded. Every sheep owner reportedly has a book that records, among other information, their visits to the Vet Clinics and their flock's vaccination records. These records can be used to track who is trading sheep.

The decisions regarding the sale and export of sheep are reportedly made by the Prime Minister with control via the DG's Veterinary Clinics. In summary, it seems the answer to the export question is conditional on local demand, supply and price of sheep and mutton. Further, the conditions under which rams and ewes can be sold differ. Rams can apparently be sold locally anytime. They can be sold for export if permission is obtained from the MOA and/or MOT. It is not clear who officially clears exports. Permission is likely to be given, if the correct people are asked; if local demand has been met; and if appropriate payments have been made. However, a good deal of export smuggling seems to occur. Apparently, much of the cross-border sales come from the irrigated south, where food is scarce in the summer. In the northern region, the flocks take to the hills and range is plentiful.

This suggests that there might be an opportunity for inter-regional cooperation, as the summer is a plentiful feed time for the north, while the winter is plentiful for the south—with alfalfa and crop residues.

Figure 3 following shows the organizational structure of the Ministries of Agriculture and Irrigation in the three northern governorates. Of note is that the Ministry combines agriculture and irrigation in one Ministry and research and extension in one Directorate.

Figure 3: Organization of the Ministry of Agriculture and Irrigation in the Three Northern Governorates



ANNEX 7

DATE PALM RESTORATION PROGRAM

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DATE PALM RESTORATION PROGRAM

PROGRAM DESCRIPTION

The nakhla, the tree of life, the date palm is the economic and symbolic foundation of Iraq's agricultural sector. For millennia, the date palm has been grown, marketed and cherished by the people of Mesopotamia. It was the crop people could rely on during times of distress and famine. And in today's Iraq, restoration of this high value fruit powerfully represents recovery of the entire country and economy from three decades of neglect and devastation.

In the early 1960s, Iraq had somewhere between 30 and 40 million date palm trees, but from this time forward, that number decreased precipitously. By the mid 1970s, the number of date palms declined to about 22 million, producing about 578,000 tons of dates. At present Iraq has only about 15 million trees which produce about 250,000 tons annually. In the past, Iraq exported a large portion of its date production, and the country accounted for 30 percent of total global supply of dates. Iraqi dates are high-end varieties, demanded in markets around the world for their high sugar content and superb flavor and texture. During the period of sanctions, Iraq was not permitted to export, and it lost its valuable overseas markets to other countries, such as Tunisia, Saudi Arabia and the UAE. Iraqi date growers and exporter exported some date production in 2003–2004, most of it poor quality dates used for animal feed. To regain its position in the international date market, Iraq needs a concerted and coordinated effort among growers, processors, exporters, the MOA and the donor community to improve and restore Iraq's competitive position in the international date market.

The Date Palm Restoration Program will tackle all links in the date palm value chain, beginning with a revitalization and protection of the date palm resource base and ending in export markets. The program will touch the lives of millions of Iraqi farmers. Date palm is the ultimate in scale neutrality; small scale farmers with a few trees can participate in production, marketing and export of this harvest as effectively as large scale farmers. In addition, the crop is grown in 13 of the 18 governorates of the country. Thus the income and employment effects of this program will be widespread and long lasting.

The Date Palm Restoration Program will provide a model to show the benefits of cooperation between the government and private sectors to achieve competitiveness in a sub-sector in which Iraq has an undisputed natural comparative advantage. This sub-sector is not faced with such intractable policy issues as price controls or PDS. It is relatively free from policies that might reduce the competitiveness of the producers, processors, or exporters.

PROGRAM OBJECTIVE

The Date Palm Restoration Program is a national program to increase the date palm national resource base from 13 million to approximately 20 million trees in 10 years, doubling average date output per tree. As a private-public partnership, this program will emphasize private sector investments in tissue culture laboratories for the rapid reproduction of highly

prized varieties as well as public investments in research, extension and varietal protection needed to sustain the program over the long term. The program will work with private companies in enhanced processing and packaging, to recapture the high end markets lost during the sanctions period. Successful implementation of this program will make dates the number one foreign revenue earner within 5 years

ORGANIZATION OF THE PROGRAM

The Date Restoration Program will be directed by a committee composed of MOA and private sector officials. The Central Committee for the Date Restoration Program will be headed by the Director General for Date Production in the MOA. Other members of the committee from the Ministry of Agriculture will be from the research arm of the State Board for Date Palm Production, the State Board for Agricultural Research and the State Board for Extension. The Central Committee will also include two representatives from private sector export or processing companies. The Deputy Minister for Agriculture and the DG for Date Production will be charged with selecting the personnel on this committee.

The program will conduct its activities in each of the 13 governorates. There will be governorate committees to oversee and facilitate the work of the program. These committees will be headed by the Director of Agriculture in each governorate, other directorate officials, for example the head of extension, and date producers and processors. Each of these committees will hire a program coordinator, provided by a donor project, to coordinate between and amongst other governorate committees and to report progress to the Central Committee in Baghdad.

The Central and Governorate Committees will convene at least once per month to review progress nationally and in each governorate. Before commencing the program, each Governorate Committee will be charged with developing a workplan subject to approval from the Central Governorate. This will include activities in production and marketing, as well as training and extension work. All the governorate level workplans will be incorporated into a national workplan for the Date Palm Program.

TECHNICAL REQUIREMENTS

The technical requirements for this program fall into four basic categories:

a) Offshoot production and distribution of appropriate varieties;

b) Extension to improve production of existing stands and rehabilitation of orchards which suffer from poor drainage or neglect;

c) Competitiveness analysis to determine needed interventions and investments to make the industry internationally competitive; and

d) A marketing strategy for the industry to assist groups of processors and exporters in packaging, handling, and developing markets for Iraqi dates; and national public awareness campaigns on the importance of dates to the national economy and dates' good nutritional qualities.

Each of these areas will be included in the Central and Governorate level workplans. Technical assistance and training and study tours will be included in each of these areas as required.

Date Palm Nursery Establishment

The Ministry of Agriculture, with assistance from ARDI, is establishing date palm nurseries in each date palm producing governorate. The nurseries will serve two purposes: 1) supply producers with offshoots to increase orchard size and production in years to come; and 2) to preserve Iraq's date palm genetic resource base. This activity will also include geno-typing and documentation of varieties to verify that varieties are true-to-type. The work to establish nurseries will continue and be completed in 2004. The MOA has committed significant resources to maintain the nurseries and distribute off shoots in years to come. Major efforts will be made to rehabilitate date palm orchards that have been neglected in recent years. For example, in Basra Governorate, there are significant areas of date palms that could be brought back into high productivity with modest investments in pruning, proper pollination, and improved drainage. In addition, the program includes rehabilitation of the palace orchards. These orchards are comprised of the most highly prized varieties.

Tissue Culture Laboratory

Tissue culture can rapidly produce off shoots to replenish the national stock of date palm trees. The Program will seek a private sector investor to establish a tissue culture laboratory.

Aerial Spraying

The dubas bug, a relative to the aphid, is the enemy of date palms. This bug destroys fruit by latching onto the tree and sucking the sweet sap out of its cells. Then it injects a sugar-rich substance into the tree that attracts fungus, blackens the leaves and interferes with the tree's ability to convert light into energy. The MOA has traditional conducted aerial spraying to manage the dubas bug, but in 2003 this was not possible. The Date Palm Restoration Program will recommence aerial spraying. The program will be subsidized by the government as a legitimate expense to protect a national resource.

Extension and Training

Iraq has a 15 year science gap in agricultural sciences and the science of date palm production is no exception. The program will include study tours to such high quality date production areas as California, Tunisia, Morocco, Saudi Arabia and the UAE. Scientists in the Ministry of Agriculture are anxious to close the knowledge gap that they themselves admit constrains the ability of this subsector to prosper. Work in the area would also include development of a webpage, and construction of an international database on date palm production and processing research.

Training of scientists is important, and even more important is training of extension personnel in proper production techniques. The program will focus efforts on ensuring extension personnel in the main date production areas are knowledgeable of modern techniques and technologies. The program will include on-farm demonstrations and specialized training to farmers.

Competitive Analysis

Having the most highly prized and most productive dates in the world does not guarantee that Iraq can compete successfully in the international date market. The program will conduct a thorough competitive analysis to identify the steps and investments needed to turn the country's natural comparative advantage into a strong competitive advantage. The competitive analysis will look at production levels, varieties and processing facilities in competitor countries.

The study will likely recommend establishment of a date palm exporters association, and the establishment of a national brand. Establishment of an association is a convenient means of channeling assistance from donors or the MOA to the private sector. The association will also be involved in training and extension activities in cooperation with the MOA.

Marketing Strategy

Once production of dates stabilizes and improves with the production activities described above, marketing of dates becomes the most important activity in the program. The program will send date palm scientists, private sector exporters, producers and marketing specialists to countries that compete in the date market to inspect processing facilities, packaging, branding and methods of marketing product to add more value. Turkey, for example, has very attractive and inventive ways of preparing dates for high markets. Saudi Arabia also has eye-catching packaging for dates destined for export markets. The marketing tours will be organized through the date palm association. We would expect additional investments in post-harvest processing and marketing to result from these tours.

IMPLEMENTATION SCHEDULE

The program schedule, subject to approval by the Working Committee, might be as follows:

April-December 2004

Continuation and completion of the date palm nursery program. Plan for the distribution of offshoots during 2005.

June 2004

Aerial spraying of date palm trees.

June 2004

Establishment of the Central Date Palm Committee and the Governorate Committees. Preparation of work plans for each governorate and an overall national work plan. The work plans will include training and technical assistance required in each governorate.

June 2004–December 2004

Seek private sector investor for establishment of a tissue culture laboratory. Make a Memorandum of Understand between the private sector investor and the MOA to define a working relationship so that small scale farmers will have access to high quality off shoots.

July 2004

Competitive analysis. The study will identify important investments and interventions to upgrade the ability of Iraqi date palm producers and processors to compete internationally.

August and September 2004

Marketing tours to Saudi Arabia, Turkey and Tunisia. Participants will be from the MOA, the private sector, including date producers.

August 2004–December 2005

Development of association of date palm processors and exporters. Distribution of off shoots from the nurseries, and large scale extension program in best practices for date palm production. Investments in opportunities identified in the competitive analysis.

December 2005–December 2008

In four years, Iraq will have increased its exports of dates by a significant amount. By the end of 2008, some new production will be coming on line from trees reproduced in the tissue culture, and a small amount may be harvested from offshoots from the nurseries.

ANNEX 8

REHABILITATION OF IRRIGATION AND DRAINAGE INFRASTRUCTURES AND SOIL-WATER ON-FARM MANAGEMENT

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REHABILITATION OF IRRIGATION AND DRAINAGE INFRASTRUCTURES AND SOIL-WATER ON-FARM MANAGEMENT

PRESENT SITUATION

Irrigated agriculture covers around 70 percent of the country's cultivated area, provides about 29 percent of the GDP and uses 20 percent of the labor force (FAO, 2003). Surface water from mainly the Euphrates and Tigris supplies approximately 98 percent of irrigated area and groundwater provides the remaining 2 percent. The irrigated agriculture sector has suffered substantially since the 1980's and is underperforming as a result of years of deterioration of the maintenance of the extensive irrigation systems and drainage networks, rising water development activities in Turkey and Syria, increased soil and water salinity, and lack of access to modern on-farm soil-water management and crop production technologies. A brief overview of the present status and issues related to irrigated agriculture in Iraq is presented hereafter to guide the strategic objectives and interventions for the restoration and sustainability of the irrigated agriculture sector.

Agro-Ecological Zones

Iraq has roughly four major agro-ecological zones (FAO, 2003):

- Northern Zone extends mostly over the northern Governorates. It is a semi-arid area with Mediterranean climate. Annual rainfall is on the average over 400 mm occurring mainly during the winter season. It is generally cold in the winter and mild to warm in the summer. The major crops are wheat, barely, and chickpea which are mainly rainfed, with the exception of the wheat which often receives supplemental irrigation. Fully irrigated areas are relatively small. The water is generally of good quality and soil salinity is not an issue.

- Central Zone is between the Northern zone and Baghdad. Annual rainfall ranges 200 mm and 400 mm and the weather is hot in the summer and cold in the winter. This zone has barely and limited wheat production and limited irrigation for vegetable and fruit crops including citrus. The water is generally of good quality and soil salinity is not a significant issue.

- Southern Zone is between Baghdad and Basrah and extends west to the areas around the Euphrates River. It includes all the irrigated areas between the Tigris a Euphrates rivers, which constitutes the majority of the summer irrigated area in Iraq. Annual rainfall ranges between 110 mm and 130 mm. This zone is characterized by mild winter and extremely hot summer. It comprises more than 40 percent of the arable land in Iraq, and produces the majority of the countries' dates, vegetables, sunflower, rice, and cotton. This is the area which suffers from soil salinity and water logging.

- Desert Zone extends south of the Euphrates River to the Saudi Arabian border and west to the Jordanian border. Annual rainfall is much less than 100 mm with extreme summer temperatures. This zone is rarely populated and cultivated with few crops in some irrigated spots, and may offer room for irrigated agriculture in the near vicinities of the Euphrates River.

Irrigation and Drainage Infrastructures

Euphrates and Tigris Rivers which originate in Turkey provide the majority of the countries water resources. Two very large reservoirs, the Haditha Dam on the Euphrates and Mosul Dam on the Tigris supply the majority of M&I and irrigation water through an extensive system of dams, regulation and pumping stations, and irrigation and drainage canals. Around two third of the irrigation network consists of gravity canals and the remaining is fed by pumped water via mainly electrical pumps.

The network of irrigation and drainage infrastructures was built in majority prior to the eighties. Much of these infrastructures have deteriorated over the past decade due to lack of maintenance. Breakage of canal lining and outgrowth of weeds and silting of unlined canals have reduced significantly their flow and conveyance capacity. After the war most of the generators, electrical systems, and spare parts of the pumping stations were looted or destroyed. Efforts are being made to service remaining generators. Systems supporting drinking water are given first priority. Over 500 large irrigation and drainage pumping stations require repair or replacement. Constant electricity shortages are the major cause of current water deficit, especially in the agricultural areas resulting in substantial decrease of irrigated land and agricultural production.

Water Logging and Soil Salinity

Shallow water table, particularly in southern Iraq, coupled with poor irrigation and drainage practices for over 10,000 years led to serious water logging and soil salinity. In early eighties, the Ministry of Water Resources (MWR) initiated the installation of on-farm drains and land leveled a significant part of the irrigated area in central and southern Iraq. This ambitious program was aborted in mid eighties and drain maintenance equipment was abandoned. As a result farm drains have not been flashed since their installation leading to serious waterlogging and soil salinity. Around 75 percent of the irrigated area in central and southern Iraq is currently affected by water logging and salinity; with 20 percent–30 percent of the most seriously affected areas are no longer farmed. The most affected areas are in the Governorates of Baghdad, Diyala, Babil, Wasit, Dhi Qar, Al Qadisiyah, Najaf, Maysan, and Basrah.

On-Farm Water Management

Based on more than two decades of isolation, Iraqi professionals did not benefit from the advances in water management for more than 20 years. As a result, national strategies for farm water management, salinity control, and participatory irrigation management programs for irrigated agriculture are seriously deficient. There is no on-farm water management program. Responsibility for farm water management is not clearly defined between the Ministry of Agriculture (MOA) and the Ministry of Water Resources (MWR). MOA and the Ministry of Water Resources have recently signed a Memorandum of Understanding (MOU), which will hopefully lead to joint collaboration on on-farm water management.

Attempts were made by the Ministry of Agriculture to introduce modern irrigation through the Oil for Food Program (OFFP). MOA started in the year 2000 a National irrigation technology (NIT) program to promote central pivot, sprinkler and drip irrigation systems. The program planned to cover a total of about 325,000 ha. in 5 years. A total of about half of this area has been equipped with modern systems that include 2600 central pivots, 2300 fixed sprinklers, and 2000 drip irrigation units. Around 3000 center pivot systems, 3000 sprinklers, and 2000 drip irrigation units were looted during the war. MOA is now having difficulties selling the remaining 1000 center pivot systems, 2000 sprinklers, 3000 drip irrigation systems to farmers at the market price.

Successful results were obtained for the use of central pivots and fixed sprinklers for supplemental irrigation of wheat in north Iraq. The NIT program recommends drip and surface irrigation for southern Iraq.

Institutional Responsibilities

The Ministry of Water Resources (MWR) is responsible of the off farm irrigation and drainage networks, land reclamation including land leveling and installation of on-farm drainage network. According to MWR farmers are legally responsible for the maintenance of the on-farm drainage system. Farmers can also ask MWR to perform the maintenance and pay the ministry for the cost of this operation. MOA provides extension on inputs and crop production and established in the year 2000 a program for the introduction of modern irrigation technology. MOA and the Ministry of Water Resources have recently signed a Memorandum of Understanding (MOU), which will hopefully lead to joint collaboration on on-farm water management.

Extension

The Ministry of Agriculture extension services have a very limited number of qualified extension officers and suffer from lack of extension strategy and lack of linkage between extensions institutions and agricultural research institutions. ARDI winter crop technology demonstrations and management is intended to develop and improve the capacity of the MOA for technology development and extension to farmers. This program includes 123

demo sites that cover rainfed, supplemental irrigation, and fully irrigated farms in various parts of the country with emphasis on wheat and barely. The irrigated demo sites include 8 reclaimed from salinization and 7 on saline soil.

Agricultural Water-Use Information

Crop water requirement information has not been updated for the current water and soil quality conditions. Irrigation water use has not been monitored for the past two decades. The introduction of on-farm water and soil management and the move towards efficient crop water use and saline tolerant crops and crop varieties requires the monitoring of cropping patterns and applied water to help farmers and decision makers to work towards optimum use of the land and water resources and adopt to various soil, water availability, and water quality conditions.

Water Policy

Current water and agricultural policies do not promote efficient water use, less-water intensive crops, salt tolerant crops, and economic use of water. The Law for Irrigation water use tariff was drafted in 1995 (Law 12) and has not passed or been adopted yet.

OBJECTIVES

- Rehabilitate the Irrigation and Drainage Infrastructures to increase irrigation water supply and control waterlogging and soil salinity.
- Establish a pilot program to introduce integrated on-farm soil-water-crop production management good practices to improve water use efficiency, conserve soil, and increase agricultural production
- Build capacity in MOA, MWR, private sector, and farming communities and strengthen coordination among these stakeholders to improve water allocation and on-farm soil-water-crop production management.
- MOA and MWR prepare and enforce policies and regulations related to soil conservation, efficient and economic water use, participatory irrigation management (WUAs), and transboundary water resources management.

ACTIONS

First Year or Short-Term Stabilization (July 2004–June 2005)

- Rehabilitate pumping stations to ensure reliable and sustainable water supply;

- Start the rehabilitation of farm drains (see Annex 1) in major areas affected by waterlogging and soil salinity. Priority will be given to affected areas in the following Governorates of Diyala, Babil, Wassit, Dhi Qar, Al Qadisiyah, Najaf, Maysan, and Basrah. This work will be done with Bechtel and the Corps of Engineers who will carry out the rehabilitation of the off farm drains.

- Start the rehabilitation and cleaning of farm irrigation canals (see Annex 1) in major areas affected by waterlogging and soil salinity. Priority will given to de-silting and de-weeding unlined farm canals in the following Governorates of Diyala, Babil, Wassit, Dhi Qar, Al Qadisiyah, Najaf, Maysan, and Basrah. This work will involve thousands of Iraqi laborers and will be done with Bechtel and the Corps of Engineers who will carry out the rehabilitation of the off farm irrigation canals.

- Build on on-going crop technology demonstration to initiate the establishment of an integrated on-farm soil-water-crop production management technology demonstration program in southern Iraq to improve water use efficiency, control water logging and soil salinity, and increase agricultural production. This first year activity will include:

    - Start a pilot laser leveling fields program to assess its impact on on-farm efficient water use, control of farm drainage and soil salinity, and increase of production

    - MOA sell the central pivot, sprinkler and drip irrigation systems currently stored in the State Company for Agricultural Supplies (SCAS) warehouses.

    - Support MOA-MWR on-farm water management Interministerial Committee.

    - MOA and MWR design and implement a collaborative and participatory pilot program on integrated on- farm soil-water-crop production management. This program will introduce best practices related to 1) irrigation techniques (drip, sprinkler, etc.) and irrigation scheduling, 2) salt and water logging control, 3) salt tolerant crops and varieties (progressive re-introduction of date palms) and less water high value crops, and 4) monitoring of quantity and quality of irrigation water use. Details about this program are found in Annex 2.

    - Support capacity building and formal training programs for researchers and extension officers on on-farm water and soil management; support the introduction/upgrade of university curriculum on on-farm water and soil management; and promote linkage between extension officers and research institutions and universities. These programs will also include Organize study tours (US and regional) on on-farm soil-water-crop production-management best practices.

- Initiate the development of Geo-referenced Database to monitor the progress of the rehabilitation of the Irrigation and Drainage networks, and manage crop water use data

Years 2-5 (July 2005–June 2009)

- Continue the rehabilitation of farm drains and irrigation canals (see Annex 1) in major areas affected by waterlogging and soil salinity;

- MWR prepares Water Resources Master Plan to assure optimum and sustainable water allocation;

- Expand the integrated on-farm soil-water-crop production management technology demonstration program to improve water use efficiency, soil conservation, and increase agricultural production. This will include:

  - Continue the laser leveling fields program, if proven to be successful, and initiate training of farmers, Irrigation Advisory extension service officers (to be introduced as new extension service), and private sector, to promote the adoption of this technique by farmers.

  - Continue support MOA-MWR on-farm water management Interministerial Committee.

  - MOA and MWR continue the implementation of a collaborative and participatory pilot program on integrated on- farm soil-water-crop production management. This program will promote best practices related to 1) irrigation techniques (drip, sprinkler, etc.) and irrigation scheduling, 2) salt and water logging control, 3) salt tolerant crops and varieties (progressive re-introduction of date palms) and less water high value crops, and 4) monitoring of quantity and quality of irrigation water use. Details about this program are found in Annex 2.

  - Continue support of capacity building and formal training programs for researchers and extension officers on on-farm water and soil management; support the introduction/upgrade of university curriculum on on-farm water and soil management; and promote linkage between extension officers and research institutions and universities.

- Work with farmers and decision makers in MOA and MWR towards the initiation of participatory Irrigation and Drainage management via formation of WUAs to take responsibility of O&M of Irrigation and Drainage systems;

- Support the creation of a KNOWLEDGE center for integrated soil-water-crop production management that include practical information about salt tolerant crops and varieties, less water high value crops, salt and water logging control, and irrigation scheduling;

- MOA and MWR prepare and enforce policies that promote efficient and economic water use, less-water intensive/high value crops, and salt tolerant crops. These policies need to be developed with full participation and active involvement of farmers and other relevant government and private stakeholders;

- MWR prepares water regulation for establishment of WUAs in collaboration with MOA;.

- Need for transboundary water resources agreements with Turkey and Syria to ensure sustainable water use for agricultural protection;

- Continue the development and management of the Geo-referenced Database to monitor the progress of the rehabilitation of the Irrigation and Drainage networks, and manage crop water use data; and

- Ensure sustainability of all above initiatives and interventions.

APPENDIX 1. DEFINITION OF TERMS FOR IRRIGATION AND DRAINAGE NETWORKS

First: The Irrigation Networks are constituted of:

A. **Farm canals** – irrigation canals carrying water from the subsidiary streams to farm directly.

B. **Subsidiary canals** – irrigation canals carrying water from the branch streams to the farm streams.

C. **Branch canals** – irrigation canals carrying water from the main streams to the subsidiary streams.

D. **Main canals – irrigation canals carrying water from the irrigation sources to the main streams or the agricultural project.**

Second: The Drainage Networks are constituted of:

A. **Farm drains** – open or covered drains to discharge drainage water from the farm into the collect drains

B. **Collect drains** – open or covered drains to collect the farm drainage water.

C. **Subsidiary drains** – drains which carry the water from the collect drains into the branch drains or the main drains.

D. **Branch drains** – drains which carry the water from the subsidiary drains into the main drains.

E. **Main drains** – drains which carry the drainage water from one agricultural project lands or more to the main outfall, depressions, evaporation basins or any other outlet.

Third: The following facilities are attached to the Irrigation & Drainage Networks:

1. **Irrigation facilities** – include the pumping stations, main, branch and cutoff regulators and its accessories of gates and steel networks etc, and also the different irrigation outlets, cascades, tail waters and bridges.

2. **Drainage facilities** – include pumping stations, outfalls, all bridges and other facilities mentioned within the designs.

APPENDIX 2. INTEGRATED ON-FARM SOIL-WATER-CROP PRODUCTION MANAGEMENT PILOT PROGRAM

BACKGROUND

The irrigated agriculture sector has suffered substantially since the 1980's and is underperforming as a result of years of deterioration of the maintenance of the extensive irrigation systems and drainage networks, rising water development activities in Turkey and Syria, and increased soil and water salinity. More than half of the irrigated area in southern Iraq, south of Baghdad, is affected by water logging and salinity resulting in low crop production, poor quality of produces, and marginal farmers' income. The southern area is characterized by low rainfall (110-130 mm), mild winter, extremely hot summer, and its agriculture depends almost entirely on irrigation. It comprises more than 40 percent of the arable land in Iraq, and produces the majority of the countries dates, vegetables, sunflower, rice, and cotton.

The planned rehabilitation of the major irrigation and drainage networks, hydraulic structures, and pumping facilities will only improve water supply to farm gates and will partially help on-farm waterlogging and salinity, but crop production will remain highly dependable on effective on-farm drainage and soil-water quality management practices. On-farm drainage is only part of the solution. Drainage helps the discharge of the irrigation leaching requirement in areas with saline soil/water, and control water-logging, but does not exclusively solve all water and soil salinity issues related to crop production. There is a need for integrated soil-water-crop production management that combines best practices related to 1) irrigation techniques (drip, sprinkler, etc.) and irrigation scheduling, 2) saline soil/water control, 4) water logging control, and 6) salt tolerant crops and varieties (progressive re-introduction of date palms).

During the last two decade of isolation, Iraqi professionals had limited access to modern advances in water management and crop production practices. Data for crop water requirement, tolerant salt crops and variety, and soil salinity are insufficient. The Ministry of Agriculture (MOA) research and extension programs are limited to crop inputs and production and suffer from very limited number of qualified staff and lack of strategy and linkages between extension and research institutions. MOA is responsible for the estimation of crop water requirement, and also initiated in 2000 a National Program for Irrigation Technology introducing sprinkler and drip irrigation in various parts of the country. The Ministry of Water Resources (MWR) is responsible of the off farm irrigation and drainage networks, land reclamation including land leveling and installation of on-farm drainage network. There is no on-farm water management program. MOA and the Ministry of Water Resources have recently signed a Memorandum of Understanding (MOU), which will hopefully lead to joint collaboration on on-farm water management.

ARDI started in December 2003 assisting MOA in a crop technology demonstrations and management and initiated in February 2004 a grant activity to help the MOA national program for the propagation and improvement of date palms in Iraq. The crop technology

program includes 123 demo sites that cover rainfed, supplemental irrigation, and fully irrigated farms in various parts of the country with emphasis on wheat and barely. The irrigated demo sites include 8 reclaimed from salinization and 7 on saline soil. ARDI date palms grant supports the purchase of date palm off-shoots for mother date palm orchards designed to preserve varieties, create a gene bank, and produce new off-shoots for re-generation.

Building on the above irrigation and crop improvement programs, an integrated soil-water-crop production management pilot program will be established by MOA, in collaboration with the MWR, farmers, and community groups and in synergy with other related national and donor program, via a pilot program that field test best irrigation, soil, and crop production practices to control soil salinity and water logging in Southern Iraq, restore date palms and improve varieties and yields for two major crops in the region. The objectives and description of the components of this program are presented hereafter.

OBJECTIVES OF THE PILOT PROGRAM

- MOA in collaboration of MWR will establish demo sites to introduce integrated on-farm soil-water-crop production management good practices to control soil salinity and water logging in Southern Iraq, re-introduce date palms, and improve varieties and yields for two major crops, preferably maize and forage grass to support and foster poultry and livestock production.

- Build capacity in MOA, MWR, private sector, and farming communities and strengthen coordination among these stakeholders to improve water allocation and on-farm soil-water-crop production management.

- Replicate good practices and results to other farms.

DESCRIPTION AND COMPONENTS OF THE PILOT PROGRAM

The pilot program will focus on three (3) areas in the Southern areas, one south of Baghdad for instance in Abu Gharaib, one in Al Wassit, and one in Basrah. The demo sites will be located in areas served by rehabilitated irrigation and drainage networks. The design and implementation of the program will be done by MOA and MWR in collaboration and consultation with the farmers.

The integrated on-farm soil-water-crop production management pilot program will include the following five major components:

- Participatory filed assessment and demo sites selection;
- Crop production;
- On-farm water management;
- Land and soil management, including drainage; and

- Supporting tools.

Participatory Field Assessment and Demo Sites Selection

A multidisciplinary MOA-MWR team composed of a date palm specialist, a maize specialist, a soil scientist, an irrigation engineer, a land-drainage management specialist, an extension specialist, and agricultural socio-economist will conduct a one month field assessment in the three designated areas of the pilot program. Field visit will be limited to areas where hydraulic infrastructure and irrigation and drainage networks are rehabilitated. The assessment will include:1) consultation of farmers and community leaders to explain the purpose and common benefits of the pilot program stressing on potential for increase of crop production and income, 2) exploring farmers ideas and develop a detailed understanding of current knowledge, attitudes, and practices related to irrigation practices, soil salinity management, and crop production, providing a baseline against which progress will be monitored; 3) Identifying doers and encourage their participation in the demo sites activities, 4) exploring needs and constraints of non-doers to identify targeted extension interventions that promote changes in farmer attitudes and behaviors concerning improved water use efficiency, soil salinity control, and crop production, and 5) collection of technical information related to soil salinity, drainage, irrigation, crop production, and crop return needed for the selection and design of the demo sites.

Seven demo sites will be selected for each the three areas based on the findings of the participatory assessment. Targeted crops include date palms and probably maize and forage. However, the choice of latter two animal feed crops may vary among the three pilot areas. The final choice will be also based on the results of the baseline. Among the criteria to be considered in the selection of the demo sites:

- New or rehabilitated irrigation area with reliable water supply and drainage system, including operating on-farm drains;
- Representation of the soil and water, and climate characteristics of the geographical areas under consideration to ensure the extrapolation of the results to other farms in the area;
- Farm owner/manager among doers;
- Readiness of farm owner to share results with other peers;
- Accessibility to other farmers in the area.

Crop Production

MOA will be responsible of this activity that includes soil and water quality, identification of crops and crop variety, and crop production extension.

Soil and Water Quality Analysis

Prior to the start of the participatory field assessment the soil scientist and irrigation specialist will collect existing soil and water data about each of the three pilot areas. Data gaps will be filled during the implementation of the technical data collection activity, item 5 of participatory field assessment. This data will be used for the selection of the demo sites. Soil and water samples will also be taken at the routine basis, around 3 times for the seasonal crops such as maize and forage grass and more frequently for date palms. This data will be used to test the crops soil tolerance and to estimate irrigation leaching requirement.

Identification of Crops And Crop Variety Suitable For Soil And Water Quality

As stated earlier the pilot program will include date palms for all the three pilot areas and two other feed crops such as maize and forage grass. This sub-component activity will be conducted by a date palms specialist and a maize specialist. They will be in charge of the design of the demo sites and monitoring of the demo implementation for the respective crops. The maize specialist will also be in charge of the forage crops demo activities. Each one of the three crops will be tested for the range of soil and water salinity within each of the pilot areas in southern Baghdad, Wassit, and Basrah.

Crop Production Extension (Inputs, Production, Protection)

The extension activity is an essential component of this program. Three crop extension specialists, one per pilot area, will perform the extension activities related to crop inputs (i.e., variety, fertigation) production, and protection. They will work in close collaboration with date palms and maize specialists and extension officers in Baghdad, Wassit, and Basrah.

On-Farm Water Management

The on-farm water management activity will be led by MOA in close collaboration with MWR. It will promote irrigation methods and technology suitable to the soil, water, climate, and crops (date palms, maize, and forage) in the three pilot areas. It will also assist farmers to improve the management of on-farm applied water by determining crop water requirements and using soil moisture sensors (tensiometers and watermarks) to improve irrigation scheduling.

The on-farm water management activity will be lead by a senior irrigation engineer with on-farm water management and irrigation scheduling experience. He will be assisted by an irrigation advisory service person (see section 3.3.4) for each of the three pilot areas.

Irrigation Methods

Flood irrigation is currently the main irrigation in practice. According to data from the National Irrigation Technology (NIT) program in the MOA, modern irrigation was recently initiated in the year 2000 and covers less than 5 percent of Iraq's irrigated land. The NIT program has been successful, especially in introducing central pivot and fixed sprinkler irrigation to wheat and maize growers in to the Northern and Central Governorates.

The program's activities in the southern part of the country are hindered by water quality, particularly salinity, and water allocation. Sprinkler irrigation is not suitable to saline water. It leads to plant damage as a result of salt deposition on plant leaves. On the other hand, drip irrigation use remains limited due inadequate water allocation. Farmers have access to water only once a week during the winter and once every ten days during the summer. Drip irrigation requires on-farm water storage facilities in order to overcome this water allocation constraint. According to the NIT program many farmers in the southern area could not afford paying for the construction of water storage ponds and buying drip irrigation equipment. There are only around 90 drip irrigation units in Baghdad, 80 in Wassit, and none in Basrah.

Efforts need to be made to improve water allocation and encourage farmers to move towards the use of drip irrigation and improved flood irrigation. Access to credit to build on-farm water storage and buy irrigation equipment would be among farmers' incentives to adopt drip irrigation.

The pilot program will focus on promoting drip irrigation and improving flood irrigation. The program will demonstrate to farmers the merits of each method in water saving, possible increase in crop production, and control of water logging and salinity. The date palms demo sites will preferably be equipped with drip irrigation systems, while the maize and forage demo sites will be under improved flood irrigation.

The drip irrigation demo sites will use drip irrigation units from those currently stored at the State Company for Agricultural Supplies (SCAS) warehouses.

Irrigation Requirement

The irrigation requirement is the amount of irrigation water which is delivered to the field to meet the crop water requirement, leaching requirement, and losses that depend on irrigation efficiency.

Crop Water Requirement and Net Irrigation Requirement

The crop water requirement is the amount of water that must be applied to meet crop evapotranspiration needs without significant reduction in yield. The daily crop water requirement depends on the daily evapotranspiration and the crop type and maturity. Daily crop water requirement is computed using reference evapotranspiration and crop coefficients

(Kc). The estimation of daily reference evapotranspiration (ET) needs climate data that include air temperature, solar radiation, wind speed, and relative humidity. MOA has only average monthly ET estimated during early 1980's. There are no operating agro-climate stations. Most of the weather stations are not functioning. This pilot program requires a minimum of 15 automated agro-climate stations to collect climate data for the calculation of evapotranspiration at the demo sites and other locations within the pilot areas.

Crop coefficients data will be obtained from FAO literature and historical Kc data in Southern Iraq. The pilot program will generate appropriate Kc values for date palms and each of the two other major crops of identified in the three pilot areas.

Once the crop water requirement for a given crop is estimated, the net irrigation requirement (NIR) is simply the amount of water that must be supplied by irrigation, in addition to rainfall, to meet the crop water requirement. Due to low rainfall and high evapotranspiration, the NIR in southern Iraq is close to the crop water requirement. Supplemental irrigation is mainly limited to the central and northern climate zones.

Leaching Requirement

Leaching is one the effective tools to control soil/water salinity. Leaching requirement is the amount of irrigation water, in addition to NIR, needed to wash out accumulated salts from the soil around the root zone. The total amount of leaching (as a percentage of the NIR) depends on the type of crop and the soil/water salinity.

Given the shallow water table and water logging problems in Southern Iraq, leaching needs to be treated with care. Drainage must be improved before soil salinity can be reduced by leaching. In fact, poor drainage often causes excessive accumulations of salt in soil even when relatively good-quality water is used. For these reasons, the pilot demo sites will be selected in areas that have rehabilitated drainage network, and leaching advisory should be introduced to farmers along with drainage extension.

The pilot program will estimate leaching requirements for the date palms and each of the two major crops according to the soil characteristics and water qualities in each of the pilot areas. Soil and water quality tests will be done on site and in the soil-water laboratories at the Agricultural Universities in the vicinities of the pilot areas.

Irrigation Efficiency

The irrigation water required (applied irrigation) for a given unit area (donum or hectare) will account for losses related to the efficiency of each irrigation method. In other words, the applied irrigation will be equal to the total of net irrigation requirement and leaching requirement divided by the irrigation efficiency, which is around 0.70-0.90 for drip irrigation and 0.40-0.70 for flood irrigation. The pilot program will determine the efficiencies of the

drip and flood irrigation in the pilot areas, promote improved irrigation efficiency, and advise farmers on applied irrigation water needed for each crop and irrigation method.

Irrigation Scheduling

The irrigation engineer will also assist farmers on when to irrigate using a range of irrigation scheduling methods based on 1) soil moisture measurements (Neutron probes, tensiometers, watermarks), 2) water balance methods (evapotranspiration estimates, evaporation pans), and 3) combined water balance/soil moisture methods.

Irrigation Advisory Service

The pilot program will include an irrigation advisory service (IAS) extension person at each of the three pilot areas. The three IAS staff will work under the supervision of the irrigation engineer. The pilot program will also train IAS staff for the MOA and the private sector. The IAS activities will include:

- Irrigation requirement that include crop water requirement, net irrigation, and leaching requirement;
- Irrigation scheduling;
- Irrigation efficiency that includes 1) field irrigation performance analysis that assists farmers in the assessment of the efficiency and performance of the irrigation system (flood and drip) and detailed recommendations to farmers on ways to improve, upgrade or modernize it, and 2) farm irrigation performance analysis, which concerns the evaluation and improvement of the water distribution and pipe conveyance system;
- Design and installation of irrigation equipment by irrigation equipment provider services or consultancy services – The project will promote the certification of irrigation engineers to ensure that all new systems are designed and installed to maximize the use of water.

Land And Drainage Management

This activity will be carried out under the responsibility of MWR in collaboration and coordination with MOA. It includes land leveling, on-farm drainage, and land-soil management extension. These tasks will be led by a senior land and drainage management expert who will supervise and coordinate with a land and drainage specialist at each of the three pilot areas.

Land Leveling

Land leveling is done only in irrigation areas developed by the Ministry of Water Resources (MWR). These areas represent a significant part of the current irrigated area. Land leveling is highly recommended for the rest of the irrigated area to improve irrigation uniformity and efficiency, reduce water logging, and increase productivity. This pilot activity presents a good opportunity to train farmers in land leveling. Around 15 laser land levels are urgently needed to promote this technology in the three pilot areas and beyond. MOA will provide a tractor for each of the land levels.

On-Farm Drainage

On-farm drainage systems were installed in all above MWR developed irrigated areas, but has never been maintained. The lack of maintenance of these drains and the absence of drainage facilities in the remaining irrigated areas are at the origin of the increased soil salinity and water logging, especially in Southern Iraq. According to MWR farmers are legally responsible for the maintenance of the on-farm drainage system. Farmers can also ask MWR to perform the maintenance and pay the ministry for the cost of this operation.

Given the importance of the on-farm drainage in the control of salinity and water logging, it is essential to support the establishment and training of on-farm drainage maintenance staff that work in close coordination with the irrigation engineers and IAS extension specialists.

Land and Drainage Management Extension

The main activities of the land and drainage management extension service will include training of farmers on laser land leveling and O&M of the on-farm drains. These tasks will be conducted by the land and drainage extension specialist for each pilot area under the supervision of the land and drainage management expert.

Supporting Tools

The following are the main supporting tools that are essential for the successful implementation and the long term impacts of the pilot program. These tools include supporting activities that are part of the program. They comprise the 1) establishment of the joint MOA-MWR steering committee, 2) creation of the KNOWLEDGE center, and 3) capacity building and training. The remaining tools namely the 1) rehabilitation of the Irrigation and Drainage Networks and 2) the policy support are separate activities that will be executed under different programs.

Establishment a Joint MOA and MWR Steering Committee for the Pilot Program

Following discussion with MOA and MWR, both parties agree on the need for the integrated on-farm soil-water-crop production management pilot program. The two institutions have recently signed a memorandum of understanding for cooperation and collaboration. Efforts are needed to build on the MOU to jointly design and implement this important program in collaboration with farmers and other relevant stakeholders.

Creation of the KNOWLEDGE center

A center of excellence or KNOWLEDGE center will be created to include results of demo sites best practices in crop water requirements, leaching requirement, irrigation efficiency, crop and crop variety salt tolerance, less-water intensive crops, crop inputs and crop protection, land leveling, drainage O&M procedures. The center will also support the establishment of an agro-climate zones map, and a GIS/Remote sensing data on crop classification to monitor impacts of the pilot program on replication of results beyond the demo sites and also monitor the progress of the rehabilitation of the Irrigation and Drainage networks. It will also include a database on irrigation water use that monitor water allocation and water use efficiency in the agriculture sector.

The center will also be equipped with the state of the art information dissemination tools that ensure speedy distribution of information to farmers, extension specialists, researchers, universities, NGOs, and relevant government and private sector stakeholders.

Capacity Building and Training

The capacity building and training will be targeted to farmers through field days programs, extension personnel via on the job and formal training sessions, seminars, and study tours. This will include topics on modern irrigation techniques, crop water requirements, leaching requirement, irrigation efficiency, crop and crop variety salt tolerance, less-water intensive crops, crop inputs and crop protection, land leveling, drainage O&M procedures, and integrated soil-water-crop production extension services.

Rehabilitation of Irrigation and Drainage Networks

The rehabilitation of the irrigation and drainage (I&D) networks will be implemented soon by Bechtel and the Corps of Engineers in a separate program under the responsibility of MWR. This activity is essential to the successful implementation of this pilot program. Replication of the results and good practices learned from the demo sites can be only done in areas with rehabilitated I&D networks. Similarly, without farm level soil-water-crop production management support, investments in rehabilitation of I&D will result in limited benefits to farmers and to the irrigated agriculture sector.

POLICY SUPPORT

Policy support is needed mainly at 1) the farm level, 2) at tertiary canal level to ensure proper water allocation to farm gate, 3) at the transboundary level to guaranty sustainability to the irrigated agricultural sector.

The development of policies that promote efficient water use, salt tolerant crops, less water intensive crops, and appropriate on-farm drainage will enhance successful implementation and replication of good on-farm soil-water-crop production management practices learned from the pilot program.

The pilot program will also benefit from the transfer of operation and management of tertiary irrigation and drainage system to WUAs. Policy and regulations for the establishment of WUAs may be part of the upcoming World Bank funded program on the development of experimental pilot associations of irrigation farmers. This project is being discussed by MWR and the World Bank.

Transboundary agreements about water-sharing are of particular importance to the sustainability of the irrigated agricultural water sector and the protection of the Marshland ecosystem.

TIMEFRAME

The total project duration is 3 years with an extension option for 2 years.

ANNEX 9

RURAL LIQUIDITY FOR AGRICULTURE AND AGRIBUSINESS

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ATTACHMENT 9A

ACCESS TO CREDIT FOR AGRICULTURAL PRODUCTION AND AGRI-BUSINESS IN IRAQ

ACCESS TO CREDIT FOR AGRICULTURAL PRODUCTION AND AGRI-BUSINESS IN IRAQ

INTRODUCTION

Credit is an integral part of agriculture production and agri-business in a market based economy. Credit is needed for:

Agricultural Production:

- Short term (less than one year, typically equal to a crop cycle)—finance for inputs, including seeds and fertilizer, hatching eggs;
- Longer term (more than one year or crop cycle)—credit to acquire fixed assets such as vehicles and other equipment; irrigation.

Agribusiness:

- Short term (less than one year, may be equal to a crop cycle)—finance to purchase crops from agricultural producers, working capital to cover processing costs, transportation;
- Longer term (more than one year or crop cycle)—credit to acquire fixed assets such as processing and packaging equipment, vehicles.

In the past credit was not needed for producers of some crops (particularly wheat and barley) because inputs were provided by the Ministry of Agriculture, and output was purchased at a set price. Even equipment inputs were provided via an equipment company owned by the Ministry of Agriculture, which imported all farm equipment and sold it at below market cost, and would provide financing in three annual installments as necessary.

In addition to the state owned enterprises of the Ministry of Agriculture, the Agricultural Cooperative Bank provided some amounts of credit in the past to agricultural producers as part of its core line of business and at the direction of the government, including for artesian wells and other irrigation. (Note that most of the loans made at the direction of the government are non-performing.) Overall however, it appears that most credit of any sort was provided through governmental sources, and there do not seem to have been any other institutional or business sources of credit.

BANKS

The banking sector has been dominated by state banks, particularly Rafidain and Rasheed Banks, which are country-wide banks with 130—150 operating branches each, including locations in regional towns. There are also four specialized state banks, including the Agriculture Cooperative Bank, which has 42 branches all over the country. In the fall of 2003 all of the specialized state banks were granted universal bank licenses, which permits them to offer a wider range of banking services than before (e.g., the Agriculture Cooperative Bank could now buy and sell foreign exchange.) There are also some sixteen small private banks, of which four or five are expected to be viable. Recent legislation has allowed three foreign banks to obtain banking licenses, and these have been granted to HSBC, Standard Chartered, and the National Bank of Kuwait. Three more foreign bank licenses will be granted in the future. Additionally foreign ownership of up to 49% of the Iraqi banks will be permitted, and more of the Middle Eastern banks are expected to enter the market via this route.

In terms of agricultural production and agri-processing, only Rafidain and Rasheed Banks, as well as the Agriculture Cooperative Bank, are expected to play any significant sector-wide role. While agriculture is an important industry in the regions, the private banks are largely based in Baghdad, and have an urban orientation and/or serve the specific business interests of the shareholder/owners. Foreign banks entering the market are likely to focus attention on business related to existing client interests, and whatever "blue chip" business is available, particularly cash management for foreign donors, and financial services related to the oil business.

The lending done by Rafidain, Rasheed, and the Agriculture Cooperative Bank can be characterized as follows:

- Loans are universally secured by land;
- Lending decision is based on the value of the collateral, with a 200% - 300% margin; cash flow is not analyzed; and
- Repayment is not enforced—as long as the collateral value is there, banks will typically capitalize the interest and renew the loan for a higher amount.

While not yet active, the IFC arm of the World Bank has indicated that it intends to institute lending programs for small and microbusinesses through six or seven banks, and has approved $140 million for on-lending (with the bank liable) and $30 million for technical assistance. These programs probably will not start until banks are recapitalized (required by the end of 2004, at ID 10 million, about $7 million equivalent) and able to receive more technical assistance.

NON-BANK FINANCIAL LENDERS

There are remarkably few formal or semi-formal non-bank lending sources in Iraq, and there seems to be a total lack of indigenous lending and savings schemes such as credit unions or other grassroots financial operations. Since the end of the war two microcredit programs have been established with support from USAID and the CPA. We note that these, and microfinance programs in general, tend to be particularly oriented towards reaching women clients, which may be an underserved group.

CHF—operating in the south and in Baghdad, about 1,200 loans through January 2004, average loan size $2,000 although program allows loans sizes of $100 - $25,000, oriented towards urban microenterprise needs.

ACDI/VOCA—loan program has just started in Kirkuk area, loans of up to $25,000 will be considered, interested in agriculture and agri-business loans.

A pilot agricultural credit scheme is presently being instituted by the CPA South, that has received $10 million from the Iraqi Development Fund for on-lending. The plan is to make loans to farmers, through cooperatives, in the ID 1—2 million range ($700 - $1,500). While the program will take collateral in the form of a lien on land, more important it intends to look to the cash flow for repayment. For instance, if it makes a series of loans through an agricultural cooperative, it will look to an assignment of payments by the cooperative as a crop is sold.

The program has hired an Iraqi advisory staff of five, one senior person and one staffer to work with each branch. The plan is to put the lending program into four branches of the Agriculture Cooperative Bank in the Basra area, using bank staff to make the loans and compensating the bank on a management fee basis. Note that funds will not be placed in the bank either as deposits or even on a custodial basis, because of the weak financial condition of the bank. As monies are needed for lending, they will be disbursed into borrowers' accounts at the bank, thus should immediately be available to borrowers for use.

A major issue right now for the program is its home after June 30. While eventually it may be appropriate to grant the funds over to the Agriculture Cooperative Bank (or its successor) this would only be done after the bank demonstrates a proven track record for being able to approve, disburse, monitor, and collect the loans appropriately, and when the bank is financially strong enough such that funds would not be going into a potential bankruptcy.

At present it appears that the funds may be transferred to the Ministry of Agriculture, and loans approved by a Rural Financial Committee that would be established for the governorate. The program is also immediately looking for training and technical assistance sources for strengthening the bank staff's lending skills, and the MOA is considering training extension staff to be able to help farmers prepare loan applications.

OTHER CREDIT SOURCES

There is a lot of "mattress money" in the country, and some financing is available through family and close business sources. This appears to be somewhat available at all business levels, and is the most common form of finance.

Missing from the mix is are the industry sources of credit, the "linkage" companies that are common elsewhere and which often provide credit as an implicit part of the product being sold. For instance, a linkage company might provide seed and fertilizer to a farmer, along with advice on how the seed should be cultivated, and be paid when the crop comes in. Since inputs largely came from the government there has not been as much development of these industry sources of credit that arise as part of a competitive market.

LEGAL AND REGULATORY ENVIRONMENT

The legal and regulatory environment is in transition, although some elements are in place, and other laws are being drafted.

A new banking law and central bank law were put in place in September 2003. The most immediate effect of the banking law is that all banks, including the state-owned banks, will have to meet the ID 10 million minimal capital requirement by the end of 2004. As noted above, foreign banks are expected to be coming directly and indirectly into the market, which will have an effect on bank policies and target markets.

There is an effective law on the books concerning pledging land and buildings as collateral, and reportedly the land records are good.

A new company registration mechanism is being put in place, as a part of the new company law that addresses foreign direct investments.

A bankruptcy law has been drafted, and is expected to be adopted before June 30.

There is no movable collateral law in place, and no movable collateral registry, except in Baghdad. There may be some vehicle registry in the north.

There is no law on leasing as a financial instrument (frequently used in lieu of lending, particularly for equipment and vehicles). (Note that the leasing law on the books refers to renting land (including agricultural land) and equipment.)

STRENGTHS AND WEAKNESSES OF THE FINANCIAL SYSTEM

Despite the state domination of the sector and the many problems cited above, there are some strengths in the financial system specific to Iraq that can be built on. These include:

- Rafidain and Rasheed banks are quite liquid, with only 20 - 30% of deposits loaned out--this means that they have the capacity to lend, and should be looking for good loan opportunities, particularly in agri-business;

- Both also have extensive branch networks of 130—150 operating offices each;

- Most lending is in the $25,000 - $35,000 range, which is a good small business size range, and appropriate for emerging agri-businesses;

- Agriculture is a major business in Iraq, and in many areas it is the key business in the area. This means that any lender operating there will necessarily be interested in serving the sector; and

- The Agriculture Cooperative Bank has a 42 branch network all over the country, and has been providing credit for agriculture directly to farmers.

At the same time, there are limitations that will have to be overcome. We note that these weaknesses are not unusual, and have occurred in comparable national circumstances where a command economy was transitioning to becoming a market-based economy.

- Heavy focus on collateral-based lending;

- Lack of a collateral law and collateral registry;

- Lack of trained loan officers and knowledge of cash flow-based lending; and

- Weak bank infrastructure, poor MIS, poor governance.

All of these points will ultimately have to be addressed to have a robust system that is prepared to lend for agriculture and agri-business. Overall it is not the Ministry of Agriculture's direct role to address these problems, but as the advocate for farmers and agri-business the MOA should ensure that its constituency's interests are considered as a key part of the reform of the banking system.

ACTIVITIES TO JUNE 30, 2004

There are three significant activities that should take place in the next three months with respect to credit.

Agriculture Cooperative Bank

The CPA has done a review on this bank (as well as on the other five state-owned banks), and it appears that it may recommend that it be merged with either Rafidain or Rasheed Bank (or that all the state banks be merged). While the CPA's global reasoning may be

understandable (i.e., to strengthen the overall financial sector as quickly as possible at the least cost possible), this would not be in the best interest of the agricultural sector. Rafidain and Rasheed banks will be interested in lending to agri-businesses, but commercial banks historically have shied away from lending for agricultural production, and would never have agricultural lending as their prime mission statement. Further, the Agricultural Cooperative Bank does have an extensive branch network in the regions, thus is already in the right locations to serve agricultural needs.

Given the importance of having a lender in the country whose major purpose is to provide credit to the agricultural sector, it is incumbent upon the Ministry of Agriculture to ensure that the continued existence of the Agriculture Cooperative Bank be given broad consideration. We have done a preliminary review of the Agricultural Cooperative Bank's financial statements, and have also reviewed the CPA's assessment. From our review, we believe that the CPA has some erroneous understandings about the bank and should be re-reviewed. (CPA staff concede that they did not spend a lot of time in the bank as its asset base is not a significant part of the banking system.) We advocate that a more thorough review of the bank be done to better understand whether the bank should survive as an independent entity. This matter is discussed in greater depth in Section B to this annex.

CPA South Pilot Credit Program

Another program that warrants immediate attention is the trial agricultural lending program that will be managed out of four of the branches in the south of the Agriculture Cooperative Bank, and will be able to pump $10 million of credit into the agricultural sector there. This is an important initiative that will be one of the few formal credit channels available in the southern region in the next few months, and it should be supported with technical assistance and training for loan officers, and for instilling an appropriate credit culture. If placed in the Ministry of Agriculture, with loan approvals coming from a local committee in the governate, it would be a good opportunity for all parties involved to demonstrate that they can manage a sustainable bank lending program that can be available to farmers on a continuing basis. Best practices, particularly NOT providing subsidized interest rates, should be followed. A good demonstration of how cash flow lending should be done would be an asset to the development of the financial system.

Sale of OFF Equipment

The last credit-related agenda item is the sale of the equipment owned by the Agricultural Supply Company of the MOA. In order to get the equipment to the right farmers, the persons who need it the most, it may be necessary to provide some financing. The Ministry of Agriculture should not be in the lending business itself, but this will be an opportunity to introduce equipment finance to the market. There may be an interest in lending for these purchases by Rafidain and Rasheed banks, as well as by the Agriculture Cooperative Bank, either for its own account or as an agent for the CPA South lending scheme described above. It will be important to quickly assess what and how much equipment is available, and who

are the eligible purchasers, then to work with the three banks to design a lending program or product that is attractive to all parties.

POST-JUNE 30, 2004 ACTIVITIES

The Ministry of Agriculture is not a credit agency, and should not become a credit agency. While an industry knowledge of agriculture and agri-processing is important for lenders to properly serve the sector, the MOA's role, if any, in a credit transaction is in developing good clients for lending, and not do lending itself. The world is littered with failed agriculture banks and agricultural lending programs that were designed to assist the farmer in non-sustainable ways, that ultimately only succeeded in persuading the financial community that farmers were not good credit risks who only expect continuing handouts. The Ministry of Agriculture needs to be the voice of modern farming, not only in technical and scientific applications but in promoting best business practices in the sector as well.

Having said this, the Ministry of Agriculture could play a counterpart role in assisting the financial community to meet the credit needs of agricultural producers and agri-businesses. For all lenders we would recommend that the Ministry of Agriculture work to assist the banks and other lenders in ways that will particularly enhance their agricultural lending skills, by educating them about farming techniques and procedures, as well as crop cycles and markets.

We have particularly used the term "lenders" rather than banks in this section to indicate that we favor the Ministry of Agriculture offering to support any of the banks, and the microfinance programs, that are interested in doing agriculturally related lending.

The Ministry of Agriculture should take this broader educational role with respect to the lenders. Industry knowledge is an intrinsic part of the lending process, and lenders can be far more responsive to clients if they understand their business. (Lenders revert to looking for lots of collateral if they do not understand a business and its risks; conversely, a lending institution can develop a specialty niche and distinguish itself from its competitors if it understands an industry well.) All workshops, forums, and demonstrations that the Ministry of Agriculture and its extension offices hold for farmers and agri-businesses in the regions should include an invitation for the local branch managers, and extension staff should call on them from time to time. In this way the extension offices, and their clients, will be showing that they understand the risks and opportunities in particular agricultural sectors, giving the lenders a greater comfort level.

Another advantage of regularly including the lenders in activities such as these is that it gives the lenders and the potential borrowers a chance to get to know each other over time. Particularly for agri-business, there will be a lot of startup businesses that should not realistically look to get credit right away from a financial institution. However, meeting in informal circumstances such as these over the time when the business is building its track record will give the lender the opportunity to see that the business is progressing, giving the lender greater confidence in the borrower's abilities to perform.

ATTACHMENT 9B

ASSESSMENT OF THE AGRICULTURE COOPERATIVE BANK

ASSESSMENT OF THE AGRICULTURE COOPERATIVE BANK

INFORMATION ON THE AGRICULTURE COOPERATIVE BANK

Conversions at ID 1,400 = $1.

The bank follows the same chart of accounts used by all banks under the direction of the Ministry of Finance, making it easier to follow the account titles and balances and to check the original figures in Arabic.

Much of the preliminary review of the bank's balance sheet was based on an information packet provided by the bank, which included the following (in English, unless otherwise noted):

- Numbers and amounts of deposit accounts, loans, and investments as of 12/31/02;
- Detailed balance sheets as of 11/30/03, in both Arabic and English, including ledger numbers from the chart of accounts;
- Summary balance sheets and income statements as of 12/31/02, in both Arabic and English, including ledger numbers from the chart of accounts;
- Notes concerning loans made at the instruction of the government (the loans were mostly for land development on the Iraq-Iran border and for irrigation);
- Schedule of shares and values of companies in which the bank holds an interest as of 11/30/03, in both Arabic and English;
- Interest rates paid on deposits and charged on loans;
- Summary of credit policy and loan purposes that the bank will consider;
- Schedule of branches and other real estate owned;
- Organization chart in both Arabic and English; and
- Bank's own recommendations for its rehabilitation.

INTRODUCTION

A significant component of a market-based agricultural policy is the availability of short-term credit to finance inputs and crop purchases and long-term credit for equipment and capital improvements. Although vendors may provide some financing and informal funding is available, it is important that the formal financial sector provide most of the financing.

The Coalition Provisional Authority (CPA) has been assessing the six state-owned banks, including the Agriculture Cooperative Bank. Ultimately, the Iraqi government rather than the CPA will decide on the disposition of the banks, but the CPA is making recommendations on the fate of the banks to the Central Bank and the Ministry of Finance. Their recommendations concerning the Agriculture Cooperative Bank and the other banks have not yet been made public, but they have intimated that they are recommending either that the bank be folded into Rafidain Bank or Rasheed Bank, or that all three be merged.

> ***We recommend that the Agriculture Cooperative Bank remain an independent entity.***
>
> ***We also recommend that a more thorough investigation of the bank be undertaken, and if the bank is at all salvageable, that a plan be put in place for its recovery.***

The CPA has the mandate to make recommendations to strengthen the overall financial sector, hence its primary concern is not with any single bank. Because the bank is relatively small—less than 10 percent the size of either Rafidain Bank or Rasheed Bank—it is understandable that the CPA would not consider salvaging the bank a high priority. The CPA is seeking the most expeditious and least expensive way to put the entire financial sector on a sound footing.

We believe, however, that particular sectoral needs should be met by specialty institutions. Agricultural lending is inherently a risky business, which most commercial lenders avoid, or to which they limit their exposure. The Agriculture Cooperative Bank's prime mission, however, is to serve farmers. If the bank is merged out of existence there will be no surviving lender that regards agricultural finance as its specialty, and we think this would be a major loss. The agriculture sector is a large portion of the Iraqi economy—especially if oil is excluded—and it accounts for a significant source of employment in the rural and peri-urban areas.

We acknowledge the weaknesses of the Agriculture Cooperative Bank, but note that many other banks share its problems, such as a lack of lending procedures and over-reliance on collateral. The bank also was particularly burdened with loans that were made at the direction of the Ministry of Finance, which will likely not be collected and should be written off.

We believe the Agriculture Cooperative Bank has many strengths,which we feel can be developed to rehabilitate the bank at a lesser cost than it would take to create a greenfields bank serving the same market:

- **A substantial existing base of depositors.** As of the end of 2002, the bank had more than 40,000 savings and current account clients, with average balances of roughly ID 809,000 ($578, assuming a conversion rate of ID 1,400 = $1) in each account.

- **A substantial existing base of borrowers.** As of the end of 2002, the bank had more than 30,000 loan clients, with average loans of ID 663,531 ($474) outstanding. Note that these loans were made in the ordinary course of business and do not include the loans made at the direction of the government.

- **A country-wide, 42-branch network.** Most branches are owned by the bank and a new branch is currently opening in Mosel. Some of the buildings were damaged during the war, but are being renovated.

- **Management in place.** Although management and staff will likely need substantial training and skills upgrading, visitors to the bank comment on their positive perception of the general manager and rate bank management the highest for all six state-owned banks. Management also undertook its own review to make recommendations for rehabilitating the bank.

- **Information systems are in place.** These will require a substantial upgrade, but the bank was the only one among the six that was able to provide CPA reviewers with immediate financial information on its operations.

All of the above factors suggest that there is a base for rebuilding a viable institution.

In our view, the CPA's assessment of the Agricultural Cooperative Bank paints a financial picture worse than the bank's actual condition. Their conclusion arose from two major inconsistencies.

The first inconsistency is the classification of ID 37.9 billion of term loans from the government to the bank as "other liabilities." These were long-term, low-interest loans from the government to fund the directed loans mentioned above. Clearly, these loans should be capitalized in valuing the bank, per the McPherson memorandum. In the write-up, however, the CPA simply classifies the loans as other liabilities, and there is even speculation about the effect of possible interest-rate sensitivity on the bank.

If these term loans are capitalized, the capital position of the bank will be significantly improved, as the schedule below indicates:

Agriculture Bank Portion of Unaudited Balance Sheet as of June 30, 2003	Unadjusted	in Iraqi Dinars 000 Adjusted per CPA	Readjustment incl Gov't Term Debt
Paid Up Capital	600,000	600,000	600,000
Reserves & Allowances	2,618,351	2,618,351	2,618,351
(Retained Earnings)	0	-46,386,284	-8,528,586
TOTAL Capital	3,218,351	-43,167,933	-5,310,235
US $ equivalent, at ID 1,400 = $1	$2,298,822	($30,834,238)	($3,793,025)

0	Beginning Balance, Retained Earnings
-1,290,000	Cash looted from bank
-53,500,000	Uncollectible loans made at government direction
-11,831,000	50% loan loss provision on the balance of the portfolio
-9,800,000	Writeoff of other assets (note: makeup of other assets is not discussed or explained)
30,034,716	Capitalization of government deposits in bank
-46,386,284	Total adjustments, per CPA
37,857,698	Capitalization of government term loans
-8,528,586	Readjusted Retained Earnings

A spreadsheet showing the full balance sheet and adjustment of all accounts is attached.

Although the revised net worth figure is still negative, it is much more manageable. It would not be unreasonable to look for a recapitalization of the bank with a negative net worth of $3.7 million, whereas negative $30.8 million seems beyond the pale. (Interestingly, the bank general manager states that the government still owes the bank ID 11 billion for loans advanced at the government's direction. Were these loans repaid, the bank would have a positive net worth of roughly ID 5.7 billion, or $4 million.)

A second flaw in the CPA's assessment is the comment that "liquidity appears to be inadequate." The assessment compares liquid assets (cash plus treasury bills) with short-term liabilities (demand deposits plus current accounts) and concludes that at 51.2 percent (ID 40.8 billion/ ID 79.7 billion) liquidity is tight. We do not find this ratio telling for a bank as a going concern, since it seems to be more like the quick ratio used to measure corporate liquidity. A clarification of the prudential ratio standard for this measurement would be useful. Generally, demand deposits are considered a fairly stable source of funding and are the main funding source for loans. Using some of the numbers from the CPA's spreadsheet and other numbers from the bank itself (deposits excluding time deposits compared with loans), we see the following loan-to-deposit ratios:

ID 000 Omitted	30-Jun-03 Unaudited	30-Jun-03 Adjusted + Loss reserves	31-Dec-02 per Bank Info Above
Loans and Advances	77,161,916	23,661,916	20,247,000
Current Accounts and Deposits	79,729,839	49,695,123	24,393,000
Term Loans From Government	37,857,698	0	0
Subtotal	117,587,537	49,695,123	24,393,000
Loan-to-Deposit Ratio	65.6%	47.6%	83.0%

Only in the bank's own numbers can the loan-to-deposit ratio be considered high, and these numbers exclude all deposits from sources other than individuals, as well as fixed deposits from individuals.

Following is additional information on the Agriculture Cooperative Bank, based on written information provided by the bank and interviews with bank officials.

Agriculture Bank Unaudited Balance Sheet as of June 30, 2003	In Iraqi Dinars 000 Unadjusted	Adjusted	Difference	Explanation
Cash and Bank Accounts	36,186,321	34,896,321	-1,290,000	Reflects cash looted from bank
S/T Investments	4,683,565	4,683,565		
Subtotal	40,869,886	39,579,886		
Loans and Advances	77,161,916	11,830,916	-65,331,000	Includes ID 53.5 billion of uncollectible loans + half of remaining balance
Fixed Assets	1,315,705	1,315,705		
Other Assets	10,549,591	749,591	-9,800,000	No explanation in write-up
TOTAL	129,897,098	53,476,098	-76,421,000	
Current Accts and Deposits	79,729,839	49,695,123	-30,034,716	Includes ID 28 billion of capitalized deposits from state-owned agricultural
Other S/T Liabilities	9,088,384	9,088,384		company, per McPherson memo
Subtotal	88,818,223	58,783,507		
Long-Term Loans	0	0		
Other Liabilities	37,860,524	37,860,524		
Subtotal	37,860,524	37,860,524		
TOTAL Liabilities	126,678,747	96,644,031		
Paid Up Capital	600,000	600,000		
Reserves & Allowances	2,618,351	2,618,351		
(Retained Earnings)	0	-46,386,284	-46,386,284	Includes:
TOTAL Capital	3,218,351	-43,167,933		
TOTAL	129,897,098	53,476,098	-76,421,000	
Readjusted Capital		-5,310,235		
Note: at ID1,400 = $1, capital is		-$3,793,025		

Mostly should be capitalized:			
Per 11/30/03 bal sheet:		37,857,698,339	long loans - government
		2,826,253	long loans - foreign
		37,860,524,592	
Similar data:	12/31/02	37,357,700,000	long loans
	12/31/01	34,000,000,000	long loans

-65,331,000		Writedown of loans
-9,800,000		Write-off of other assets
-1,290,000		Write-off of looted cash
30,034,716		Capitalization of government deposits
-46,386,284		Total
37,857,698		Capitalization of government term loans
-8,528,586		Readjusted retained earnings

DEPOSITORS

The information packet shows the following:

As of 12/31/02: Type of Account	Number of Customers	Deposit Amounts (ID, billions)	% of Total	Calculated Avg. ID	Avg. US$	Portfolio in US$
Deposit	7,866	6.293	19.1%	800,025	571	4,495,000
Current	32,909	18.100	54.8%	550,002	393	12,928,571
Fixed Cash Deposits	53	8.640	26.2%	163,018,868	116,442	6,171,429
Totals	40,828	33.033	100.0%	809,077	578	23,595,000

The accounts shown above are savings deposits. Per the 11/30/03 balance sheets, total savings deposit balances are ID 8.007 billion, or roughly $5.7 million. Most of this money is in ledger number 25217, Savings Accounts Individuals (ID 7.669 billion, roughly $ 5.5 million.)

The bank also has account balances by branch, which are contained in a hand-written ledger compiled from all the branches (compilation of individual branch balance sheets), with a column for each and a subtotal on each page, later carried to a summary page. For example, below are the balances for ledger number 2517, Current Account – Private Individual (date uncertain):

Branch	ID Amount	$ Equivalent
Tikrit	151,662,645	108,330
Faluja	12,797,511	9,141
Dalgana	54,424,933	38,875
Lusifia	242,516,488	173,226

The general manager strongly emphasized that the 40,828 savings accounts and current accounts shown above are *active, not dormant accounts*.

Fixed deposits pay a higher interest rate for fixed terms of six months, one year, or two years. It appears that the owner may write drafts of a sort on the account, since the general manager showed a sample withdrawal/draft book (and also showed a checkbook for the current account and a passbook for the savings account.) The breakdown of these accounts by owner type as of 11/30/03 and 3/16/04 (printed from a computerized report) are as follows:

Ledger Number	Account Type	Balance 11/30/03 ID	Balance 3/16/04 ID
25311	Government	1,832,100,000	1,000,000
25312	Socialist (Bank?)	100,000,000	0
25313	Insurance Companies	4,745,000,000	3,866,000,000
25314	Cooperatives	833,310,000	0
25315	Mixed	500,000,000	
25316	Private Companies	1,112,926,328	1,374,025,183
25317	Private Individuals	1,175,568,107	627,385,656
253	Total	9,548,904,435	5,868,410,738

LOANS

The information sheet shows the following:

As of 12/31/02: Credits	Number of Debtors	Subtotal (ID, billions)	% of Total	Calculated: Average Loan/Invest in ID	Average Loan/Invest in US dollars	Portfolio in US$
Agriculture Loans	19,378	13.565	67%	700,021	500	9,689,286
Commercial Facilities	11,136	6.682	33%	600,036	429	4,772,857
Totals	30,514	20.247	100%	663,531	474	14,462,143

Loans appear to be written down, with loans on the November 30, 2003 balance sheet showing a ID 67.226 billion balance.

According to the general manager, the loans shown above are ledger number 1417, Long Loans Individual Special (term loans to individuals) and 1427, Short Loans Individual Special, which as of 11/30/03 totaled ID 66.2 billion. (Other loans as of that date totaled only about ID 10 billion, bringing total loans to ID 76.2 billion).

The general manager emphasizes that the schedule above *excludes all the questionable loans* that were made at the government's direction, for which the Ministry of Finance is supposed to provide assistance in collecting. The *30,514 loans* shown above *were made in accordance with the bank's usual lending practices and not under coercion.*

All the loans in the good portfolio are active rather than dormant. Prior to the war, roughly 70 percent of the loans were repaid on time, but this rate has dropped in the past year. (Full details on the past-due loans were not provided and it is unclear whether there are some past-due amounts or whether loans have been rescheduled.)

The bank has a schedule of lending limits, including ID 2 million for a branch manager (roughly $1,400), ID 4 million for the head of credit ($2,900), ID 6 million for the assistant general director ($4,300), and ID 10 million for the general director ($7,100). Loans of more than ID 10 million must be approved by the Board of Directors.

The average original loan amount is estimated to be ID 8 million ($5,100). The largest loan made by the bank is ID 400 million ($286,000). There are also branch limits, with some branches apparently limited to handling loans of less than ID 20 million ($14,000).

INVESTMENTS

Agriculture Cooperative Bank Name As of November 30, 2003	Schedule of Investments # Shares	 ID Value	Account 1525 Calculated $ Value %	 Active?
Iraqi Company for Agriculture Produces	20,995,250	20,995,250		$14,997	
National Co. for Industrialization Meats	1,500,000	2,000,000		$1,429	
Iraqi Company for Production and Marketing Meats	93,333,333	93,333,333	< 10%	$66,667	
Iraqi Company for Trade and Industrialization Dried Dates	101,400,000	105,400,000		$75,286	
Seeds Production Company	100,000,000	100,000,000	10%	$71,429	
Al-Kendy Co. for Production Fecundating Fluid	12,000,000	13,500,000	10%	$9,643	
Iraq Co. for Production and Marketing of Fish	3,800,000	3,800,000		$2,714	
Baiharit Al-hebeebiah Co.	35,500,000	35,500,000		$25,357	
Al-Ataifiah Co. for production of Fodders Determinate	51,000,000	51,000,000		$36,429	
Al-Ajeal Co. for Agriculture Investment	1,500,000	1,500,000		$1,071	no
Al-Musail Bank for Development and Investment	50,000,000	50,000,000	5%	$35,714	
Dar Al-Salam Co. for Insurance	15,000,000	15,000,000	5%	$10,714	
Investment Bank Al-Afrowasty	60,000	60,000		$43	no
Iraqi Co. for Bank Services	100,000,000	100,000,000		$71,429	
Totals		592,088,583		$422,920	

Note: Also see investments in Loan and Deposit statistics. Iraqi Co. for Bank Services (last on this list, separately broken out on other list) is an exact correspondence.
Total investment here is in 13 agricultural companies for ID 492 million;
as of December 31, 2002, total investment in 11 agricultural companies was carried at ID 770 million.

The bank produced stock certificates for several of the investments, which show the total number of shares issued (hence the percentage ownership can be determined.) The Iraqi Company for Bank Services (last on the list) is wholly government owned; the others have mixed private and government ownership.

Some of the businesses are not operating at all (these are marked on the list) but the others are operating at some capacity. (The bank does not appear to have an active role in these investments.)

REAL ESTATE OWNED

The schedule shows mostly branch properties, with some residences and vacant lots. Some of these properties seem to have been former branches; the vacant lots were for building new

branches. Forty-two branches are open, and a new branch will soon open in Mosel. (Note: Tuckett and Jepsen with CPA South say that at least two of the branches there are being rebuilt.)

TERM LOANS (LONG LOANS) FROM GOVERNMENT

		ID 000 Omitted	US $
2411	Long Loans – Government November 30, 2003	37,857,698,339	27,041,213
2421	Long Loans December 31, 2002	37,357,700,000	26,684,071
2421	Long Loans December 31, 2001	34,000,000,000	24,285,714

(Despite the slight discrepancy in the ledger number, the above appear to be the same item, based in part on the large amount, the account name, and on the explanation of the general manager.)

According to the general manager, these funds were put in the bank for a five-year term at a low rate so the bank could make the loans at government direction to individuals on the Iraq-Iran border. The government still owes the bank ID 11 billion for advances given. (Per the McPherson memo, additional amounts are not forthcoming and will be cancelled.)

ATTACHMENT 9C

ROLES FOR USAID'S DEVELOPMENT CREDIT AUTHORITY IN IRAQ

ROLES FOR USAID'S DEVELOPMENT CREDIT AUTHORITY IN IRAQ

USAID has recognized that credit can frequently play a significant role in development. Many development agendas, including in economic growth, energy, local governance, and even health include projects that can reasonably be funded by credit because they are financially viable, and generate enough cash flow to cover expenses and repay a loan. However, typically lenders regard development projects as too risky to lend on, and look for substantial collateral and other sources of repayment as a condition of advancing such credit.

To bridge this gap USAID has developed the Development Credit Authority (DCA), a credit enhancement mechanism that provides a 50% pari passu guarantee for private sector lenders (i.e., USAID and the lender each bear 50% of any loss). The DCA mechanism is quite flexible, and can be applied on any kind of credit such as loans, bonds, leases, letters of credit, and can even be used to enhance other guarantees. A guarantee could benefit a lender either through enhancing the loans that the lender makes (the assets) or by enhancing the lender's ability to source funds (a liability, i.e., a loan to a lender for on-lending can be guaranteed.) The term of the guarantee can match the term of the credit, and can be as long as twenty years.

From USAID's perspective providing a guarantee can be much more cost effective than providing grant funding, because the cost of the guarantee or "credit subsidy" is the net present value of the expected payments under the guarantee (i.e., 50% of the losses). The credit subsidy cost on deals done in several countries has ranged from 2 – 7% of the deal amount. Using 4% as an example, this means that for $40,000 USAID can offer a guarantee of 50% of a loan of $1 million. In other words, using a DCA means that a mission can get substantial financial leverage on its money.

More important than the financial leverage, however, is that development of the financial sector, in addition to the project, should also occur. Having a partial guarantee permits a lender to take the risk to go through a learning process to understand how to lend to a new type of client or in a new industry. From USAID's perspective the DCA is a way to address financial market imperfections in developing countries, and pave the way to broader acceptance and use of conventional financing mechanisms.

There are four basic types of DCA guarantee:

Loan Guarantee – the lender and the borrower have been identified, USAID is able to analyze the project and determine that it is financially viable

Portable Guarantee – the borrower has been identified, and USAID has analyzed the project and determined that it is viable. A commitment is made to the borrower to issue a guarantee, so the borrower can "shop" for a lender. The commitment will specify that the lender must have an acceptable quality rating by an independent bank rating agency

Loan Portfolio Guarantee – the lender has been identified, but there will be several borrowers of amounts too small for USAID to analyze on an individual basis. USAID will vest the guarantee decision authority in the lender, and will give a 50% guarantee on each loan designated by the lender.

Bond Guarantee – the structure of the bond issue and the issuer are known, USAID is able to analyze either the specific use of funds or the type of project for which funds will be used.

There are some major issues in effectively using credit, and particularly a DCA guarantee, in Iraq. These include:

- Iraq is still substantially a war zone, and credit of any kind is extremely risky in such circumstances;

- DCA is designed to leverage private sector money. At present the banking system is virtually all state-owned banks, which would not be eligible for a guarantee without a waiver; and

- While funding is coming in from other donors such as the IFC for on-lending, these are not private funds, hence are not appropriate for a guarantee.

Notwithstanding these significant problems, there are some ways that DCA might be used to enhance credit in Iraq, particularly credit for agriculture. It is unlikely that a deal of this type will be concluded in the next year. Realistically this most likely could form a part of the three to five year strategy.

Loan Portfolio Guarantee to a bank for loans to agricultural producers and agri-businesses – unlikely, although there may be a private bank that is interested in developing this line of business.

Loan Portfolio Guarantee for an equipment manufacturer or related company to provide equipment finance, either loans or leases. Finance to purchase the asset is frequently part and parcel of the product that is being purchased. In this case the lender or lessor may be an American or other firm selling one or more lines of farm equipment in the country. This could probably be sourced as a Global Development Alliance (GDA) deal from an American company that has a humanitarian interest in helping the country as well as a commercial interest in expanding into the market here. Another possible lender could be a regionally based equipment dealer or leasing company.

Significantly, DCA can be used to guarantee sub-sovereign debt, hence can be used to enhance municipal credit. DCA has been used for both loan guarantees and bond guarantees in connection with municipal water projects and irrigation projects. While a great many other pieces of a project will need to be in place to do a deal (for instance, determining all the project costs, income stream, municipal competence to manage the project as though it was a private company or else licensing it to a private company to manage, assuring that users will

pay for the product, etc.) the DCA mechanism could make the actual credit part of the project easier to complete.

Loan Guarantee for additional funding for on-lending for one of the microfinance programs operating in Iraq. This would be feasible if these are operating as independent institutions on a sustainable basis.

ATTACHMENT 9D

RURAL MICROFINANCE

RURAL MICROFINANCE

EXISTING MICROFINANCE PROVIDERS / PROGRAMS IN IRAQ

Community Habitat Finance (CHF).

CHF was awarded a $10 million fund under several different grants from the CPA. It is obligated to lend in Baghdad and all of the southern governorates. Of the amount awarded, currently $2.5 million is outstanding in the south. The Baghdad program has only recently started and has a much smaller outstanding portfolio. CHF issued its first loan in August 2003 and currently has 1,149 active clients. It has been able to maintain a 100% repayment rate. The lending methodology is individual lending using guarantors. Loans are for up to 2 years, although the vast majority are less than 12 months. Maximum loan sizes are $25,000 but average loans are in the $2,000 range.

CHF uses Rafidain bank as its retail window. Loans are issued in checks drawn upon CHF's accounts at Rafidain and repayments are made directly to the bank. Although providing a safe mechanism to disburse the funds, CHF has found that Rafidain is a difficult partner in the process and has made its lending cumbersome. The bank operates each branch as an independent entity as there is no branch networking. CHF investigated other banks when they arrived, but found that all of the private banks were family-held and did not have sufficient branch networks to meet their needs.

CHF does not target agriculture specifically, although about 10% of its current portfolio reaches agriculture related enterprises such as animal husbandry and small scale agriculture processors. Approximately 16% of CHF's portfolio reaches women. It is not opposed to doing agriculture lending, but it does not see crop production as a major area for expansion of its program. CHF currently has $10 million in capital, but wants to raise another $5 million for the south as they expect that their existing portfolio will not meet demand.

CHF charges a flat interest rate of 11 percent taken upfront. This is customary bank practice throughout the Middle East. Their overall strategy is to build a local institution but this is a long way into the future. Staffing has been difficult and there is no one from among the local staff who meets the requirements for a deputy or potential director for the program. CHF currently has 4 expatriates working on the program and is recruiting an additional expatriate regional coordinator to provide support to the southern governorates.

This program would be a viable partner for ARDI as their financial projections anticipate that demand for credit in the southern region is far greater than their existing portfolio allocation of $5 million for that region. Although CHF is not interested in purely crop lending, it is interested in expanding outreach to rural areas for both crop and animal husbandry loans.

Given that CHF's credit program is a young one and that there is a heavy need to focus on staff capacity building, any support to CHF in terms of capital should be accompanied by

technical assistance to staff to enhance knowledge of the assessment of rural enterprises. Furthermore, support should also be considered for the overall efficiency and management of the program.

Loan Size	$100-$25,000
Loan Term	Up to 2 years, average 1 year
Average loan size	$2,000
Guarantees	Co-signers
Nominal Interest rate	11%, taken up front
Effective Interest rate	20.31%
Repayment rate	100% (note this is not on-time, clients do pay late, but often problem due to bank)
Active clients	1,149 as of Jan 2004
Outstanding portfolio	Approximately $250K in the south, just started in Baghdad
Locations	Baghdad. All southern region with offices in Babylon, Hillah, Najjaf, Karbala, Diwaniya, Basra and soon to open in several other locations.

ACDI/VOCA

Based in Kirkuk, ACDI/VOCA's microfinance program is called Al Thiqa. It began lending with individual loans and is looking to start group lending as well. ACDI is currently exploring the option of partnering with the Kurdistan Economic Development Organization (KEDO) as its group lending arm, however it is still exploring their capacity to on-lend.

ACDI anticipates a significant amount of its portfolio to be focused on agriculture production and processing. Already it has funded one poultry farm for $25,000. Furthermore, through their other USAID grant, ACDI is promoting the development and growth of agricultural cooperatives and these may be borrowers from their credit program in the future.

This program is very young and requires considerable technical assistance in order to expand. Staff development in basic microfinance is required. At the same time, there is considerable synergy between their potential target market and ARDI's interests and thus there is considerable room for cooperation.

Loan Size	Group loans - $100-$1,500 Individual loans - $1,500 - $25,000
Loan Term	Maximum 12 months
Average loan size	
Guarantees	Real Estate, building, equipment or agricultural products for individual loans
Nominal Interest rate	9% flat, 2% upfront fee
Effective Annual Interest rate	20.31%
Repayment rate	Repayment starts in April.
Active clients	12 loans disbursed as of February 2004
Outstanding portfolio	Approximately $200,000
Locations	Kirkuk, Arbil, Sulaymaniyah, Ninawa, Dahuk, Salah ad Din, Al Anbar and Diyala.

CPA South and the Agriculture Cooperative Bank.

The CPA South is in the process of establishing a $10 million pilot credit scheme working through the Agriculture Bank. The fund is currently envisaged to offer small loans of between $100 to $2,000 for periods of up to 12 months for working capital.

The scheme is linked to farmer's associations which would guarantee the purchase of the crop at a certain price and that this would be the required guarantee for the bank. The managerial structure is based on a 4 person team of former Iraqi bankers who are going to be hired by the CPA to advise the bank. Additionally, the CPA has an outside consultant hired by DFID, Mr. Tim Tuckett, who is advising and leading the start-up of the program. Mr. Tuckett has been focusing on renovations and staff capacity of each of the branches. The status report on the branches is provided in Box 1.

This program offers an opportunity to support a large number of rural households in the south of Iraq. There is considerable support required and

Box 1: Status Report on Agriculture Cooperative Bank Branches in Southern Iraq, Mr. Tim Tuckett of the CPA South

Basra is currently not in operation and still needs further refurbishment specifically the vault, external walls, roof and some office space. This branch also needs to be furnished and equipped with computers. CPA is still working towards completing the outstanding refurbishment and supply of furniture and equipment. Security for the branch is inadequate for normal banking operations. This will be addressed when the branch re-starts business. Ag Bank Management estimate this branch will be fully functional within two weeks. The staff I met seemed competent and had the necessary skills to implement the credit scheme.

Samawah is currently in operation with fully equipped offices and a secure vault with a small amount of currency. All staff are competent and fully trained. The branch manager is younger than most and seems to be a "progressive thinker" - has ideas on how we can work with farmers associations to collect payments rather than taking the view that all loans must be backed by collateral. Security is good, there are 3 armed guards on site over whom the branch manager has some management responsibility.

Alamara….is a new building, which will be fully equipped and furnished by the end of next week. The vault is fully operational and secure. I have met all the relevant staff suitable for this scheme, who are bright, young, well educated professionals. They have computer and accounting skills and are familiar with managing loans. ARDI should be able to work in this branch, in fact I do see this branch as the leader in starting the scheme. There is a good support group in Alamara in the form of CPA.

I have not recently been to Nasiriyah, and cannot comment

March 16, 2004

ARDI can have a role in providing training and technical support to the southern branches. Additionally, the program requires some long-term planning in determining the ultimate ownership structure of the fund and the criteria by which its future should be based.

CPA Direct Lending i Sunni Triangle wth 2 Private Banks.

The CPA is directly administering a microfinance program with two private banks, the Bank of Baghdad and the Middle East Bank. Loans are up to $15,000 and the banks must put in matching funds. After the grant period, the banks will be granted the portfolio. The CPA is organizing bank training on relevant skills. Bearing Point is providing some training expertise for this. All loan parameters are left up to the individual banks, however loans are not to exceed $15,000. This program has no direct focus on rural areas or agro-enterprises.

Other Credit Providers.

There are many smaller PVOs/NGOs that are looking at starting microfinance programs targeting both rural and urban areas. Some of these include Women for Women International and The Palm Foundation based out of Kuwait. As the market evolves and new programs are operational, ARDI should investigate opportunities for cooperation. Women for Women is a particular interest given their exclusive focus on lending to women. As few other institutions do so, this might provide an opportunity for ARDI to obtain some gender balance in its support to rural finance institutions.

MARKET FOR RURAL FINANCE AND AGRI-BUSINESS

See Annex 11 for a survey of the demand for credit in areas around Basra. This research revealed the large need for credit (85% of those interviewed). Overall, the sizes of the loans requested are much larger than the farmer's capacity to repay. The average amount requested was around $4,500 and yet the majority of rural households can repay less than $25 per month. Household incomes were on average around $219 while expenses averaged $234. While it is expected that affordability would be enhanced by increased incomes obtained from expanded business activities, affordability remains a concern and therefore loan sizes should be reflective of this fact.

	% Demand credit	# of Rural Households[1]	Potential size of market	Financing Required (USD)[2]
High	85%	668,929	568,589	88,131,295
Medium	50%	668,929	334,464	51,841,920
Low	25%	668,929	167,232	25,920,960

[1] Total rural population is 8,027,149[1] (taken from FAO figures, July 2003). This is divided by the average household size for rural families found to be 12 in the Basra market research study conducted by ARDI.

[2] Average loan size $250 based on market research study in Basra region. Average outstanding loan balance (62% of loan size) is approximately $155 x potential size of market = total financing required.

The overall potential market size for rural finance is between 167,000 to 568,000 clients, depending on the estimate of demand utilized. The financial resources required to meet this market would range from $25 million to $88 million, assuming modest loan sizes of $250 per client. The existing facilities have a maximum outreach of approximately 18,000 active clients,3 which falls far short of the potential market size. While the available combined portfolio of the existing providers is approximately $25 million, only around $13 million is exclusively focused on rural lending. Additional resources to meet the demand of the potential market is necessary.

The above analysis does not take into account the market for agri-enterprises whose loan sizes would be substantially larger. There is very limited information available on the existing private sector small and medium enterprises engaged in agricultural related activities. ARDI has reviewed the files of registered businesses with the Ministry of Trade and the Lawyers Association and has determined that there are approximately 512 private firms registered in the books. It is not clear how many of these firms are currently operating.

PRIVATE SECTOR DEVELOPMENT INITIATIVES

The CPA and USAID have both funded a variety of private sector initiatives that serve as available resources for support to producers and agri-businesses.

IACC – Iraqi American Chamber of Commerce

The IACC is a membership based organization promoting cooperation between US-based and Iraqi-based businesses. The IACC recently completed a report on small and medium enterprises in Iraq that analyzes the opinions of 400 firms. The findings show that businesses are optimistic regarding the future of the economy, with some discrepancies depending on regions. The south is the most optimistic, with the center somewhat neutral, while the north is pessimistic. The IACC is putting together a large trade exposition that will take place in April in Baghdad. By joining the IACC, ARDI can gain access to their database of firms and participate in trade shows and other activities.

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[3] CPA–South has $10 million. With an average loan size of $1,000 (average outstanding balance is $620), the total active clients would be 16,129 rural households. CHF has $10 million. With an average loan size of $2,000 (average outstanding balance is $1,250), the total active clients would be 8,000 of which 10% are rural. Total active clients in rural areas for CHF is therefore 800. ACDI has $5 million portfolio with an average loan size of $10,000 (average outstanding balance is $6,200). Total active client is 806 of which 50% are rural. Total active clients for ACDI is therefore 400.

Iraqi Business Center.

This is a federation of business centers that is being established throughout the country. The Center, which is managed by Bearing Point, is mainly focused on helping firms access CPA tenders at this stage. The center shows Iraqi firms how to obtain contracts and how to manage them. They see financial advice as part of the process in advising businesses, but they have yet to start offering this service. The Iraqi Business Center is helping to set up business centers in other cities, but these are financed outside of Bearing Point's existing contract. RTI is setting up some in of these centers in the south of the country. Mercy Corps is also setting one up, as are other firms.

CIVIL SOCIETY AND COMMUNITY DEVELOPMENT INITIATIVES

There are several organizations in Iraq that are funded through two separate USAID initiatives, one supporting civil society and local governance and the other supporting community development. The Iraqi Community Assistance Program (ICAP) is administered by four NGOs that identify community needs and finance the completion of community identified projects. Many of these projects are agriculture related. Several of the NGOs, including ACDI/VOCA and CHF, see the development of agricultural cooperatives as an area of focus for the future. The cooperatives are assisted to register with the governorate, to establish by-laws and working principles, and are then awarded an income-earning project, which is then managed by the cooperative. Profits are distributed among members. In the future, the NGOs envision that their programs would link with credit providers who could then lend to the cooperative for expanded enterprises. As these cooperatives develop, there may be a need for ARDI to explore their role as potential clients for credit.

Currently, the legal and political situation with cooperatives is still uncertain. The Farmer's Cooperative Law was revised in 2001. Under this law, farmer's cooperatives no longer operate under the Ministry of Agriculture but form a part of a larger federation or union of cooperatives. The law itself is written with a socialist political slant and will clearly need revision with the transition to market-based production. Many farmers perceive that cooperatives are political organizations. And indeed, under the Ba'athist regime many of these institutions were political organizations.

There is a separate Cooperative Law that falls within the purview of the Ministry of Interior. This law is much less political and closer to a desired cooperative law. However, there is a provision within this law that states that specialized laws that exist in the books (such as the Farmer's Cooperative Law) would supercede this general law. Thus for agriculture related activities, the Farmer's Cooperative Law is the legal basis from which cooperatives are governed.

ANNEX 10

LAND TENURE

TABLE OF CONTENTS

TENURE OF AGRICULTURAL LAND IN IRAQ— PRELIMINARIES FOR THE AGRICULTURAL STRATEGY

By Norman Singer

INTRODUCTION

For 10 days during March 2004, I was able to meet with a number of people, mostly from the State Board for Agricultural Lands of the Ministry of Agriculture (MOA). My investigations were wide ranging, but mostly based on personal conversation because much of the specific information was written only in Arabic and could not be translated in the time available.

The most important lesson learned is that through the years, the Iraqi government pursued a consistent program in which it viewed its land assets positively and administered them with care and vigor. The modern policy of tenure security has varied, based on the politics of the day. Thus, tenure policy can be said to have had three periods. The first was in the 1930s when a systematic adjudication was conducted under the leadership of the British administration. The second period began in 1970 in a period of agrarian reform influenced in many ways by the Egyptian agrarian reforms of the 1950s. The third period began with the imposition of sanctions in the 1990s and has continued into the period following the downfall of Saddam Hussein, when much looting and destruction took place.

The bottom line appears to be that Iraq has a clear system of land administration. The administrators take their jobs seriously and perform remarkably well in light of some serious deficiencies in technology and the lack of access to files destroyed during the post-Saddam looting and destruction.

In this report, I have attempted to reconstruct and describe the system of tenure of agricultural land in the three periods outlined above. The last section of the report deals with potential policy reform to assist Iraq's administration in updating and modernizing its system of land administration, including recommendations for appropriate technology and a more market-oriented system of land holding.

We begin by looking at the various systems of agricultural land holding in existence at the time of writing this report.

SYSTEMS OF LAND HOLDING

Private Ownership

There is some privately-owned land in Iraq, but it is estimated to amount to only 1 million donums (1 donum = one quarter of a hectare, or 2,500 square meters). There have been various programs over the years to restrict the amount of privately-owned land. In the agrarian reform of 1958, for example, the government limited ownership to 350 donums per person, and took the "excess" land of the big land owners. However, Saddam's government encouraged powerful individuals to claim extra lands in an effort to buy the support of certain people who held grassroots power.

Ownership of land is handled legally in a rather orthodox manner. Iraq's law governing traditional private ownership is primarily a combination of Ottoman and British law, with some aspects of Islamic law. A series of agricultural laws have laid out the basis of the land tenure situation, starting with the first agrarian reform law of 1958. Variations have been introduced in a number of laws since then.

Of note, my discussions at the State Board for Agricultural Lands raised the possibility that pre-1958 owners might try to get their lands back as part of any program recognizing property claims against the Saddam government. State Board officials felt, however, that there was very little risk that pre-1958 owners would come in to claim land, though they added that it should not be encouraged.

Use Land

Right-of-use land encompasses approximately 3 million donums and exists throughout the country. The designation of land as "use" land was made in a traditional land adjudication carried out by committees that went around the country and, as I understood it, designated use land as land that had no owner.

In such cases, the farmer becomes the user of the land, which is designated as use land under law No. 401 of 1983 if there was a "Tapu" (the document on which the interest was recorded) in existence prior to the designation. If a Tapu exists, the use land can be bought and sold, but the buyer only gets a quarter interest and the government retains the other three-quarters interest. However, the holder of the one-quarter interest can buy the government's interest and the land can be converted to private land. The price of the three-quarters interest is predetermined according to law No. 12 of 1981. The purchase price is determined by Tapus in the district where the land is located, which record purchase prices of land.

Roughly one-third of so-called agricultural land in Iraq has no category, but this is generally desert or other land not suited for agriculture.

Free Distribution Land

As one of the basic elements of the agrarian reform that started in 1958, agricultural land was distributed to individuals and groups under the authority of law No. 117 of 1970. The distribution of free lands continued until approximately 1987. However, there are consistent problems arising from this process, especially as the population among this group ages and holders of free distribution land die without heirs or depart their land. Where these issues arise, the free distribution land is often converted into leasehold land and it has remained under government ownership. It has been reported that the area of free distribution land has been reduced from approximately 12 million donums at its peak to somewhere between 7 and 8 million donums today. The area has been reduced for various reasons: sometimes for lack of an heir following the death of an allottee; in other cases because the conversion of rainfed land to irrigation has resulted in the diminution of dry land because of acreage taken for canals.

To qualify for free distribution of land (referred to here as distribution land), recipients had to meet the following criteria (1) be 18 or older; (2) be committed to agriculture and not working for the government; (3) not have other land; (4) farm the land themselves; and (5) be Iraqi citizens. The maximum distribution was 50 donums for an individual, 120 for a group.

As this category of holdings diminishes and the holders age, minor issues arise, but only if the holders leave the land or die without leaving heirs. Fragmentation of the land is not an issue as there is a legally mandated minimum holding, which is usually respected, and to acquire the land a new owner has to meet the conditions set out for the original grant.[1] If there is no one to claim the land, the land simply becomes government lease land and the usual leasehold provisions apply (see below).

In the larger villages, free distribution is often made to groups. These groups are typically 6-10 people, and their holding can vary in area—the villages we analyzed typically had distributions of 120 donums for, say, 10 people. The land is held collectively and the individuals determine how to subdivide the parcels among themselves. Issues generally do not arise unless one of these individuals leaves the group or dies. The death of a group member is not necessarily a problem if there is an heir to whom the interest can pass. However, if there is more than one heir—and these heirs are not already members of the group—or there is more than one heir and only some of them are members of the group, or if there are no heirs at all, there can be problems reorganizing the already-existing group. Mechanisms exist for dealing with such disputes, but they are time-consuming and often disruptive to the group of land holders.

[1] Sources stated that often a death is not reported until some time after the holder of distribution land has died. This suggests that members of the extended family might have dealt with the change in their own way, and it is not attended to by the government until sometime later.

Review of Land Records

Pertinent to this discussion of land tenure are some data from the State Board for Agricultural Lands that the Director General was kind enough to let me review. The State Board keeps rather detailed information on every land holder in all categories of agricultural land. In the brief time I was in Iraq, I was able to look at statistics for a few villages that had different types of land holding.

For example, I looked at two villages where free distribution had taken place. One was a large village of 98,605 donums, of which 79,458 donums were allocated for crops. This village was in northern Iraq where wheat and barley are the primary crops. Each allocation was made to a group, and amounted to 120 donums per parcel. I was able to review the case histories of 281 of the 785 persons in this rather large agricultural village.[2] The parcels were distributed, where possible, to groups of relatives or people whose personal goals were similar, an approach intended to reduce the potential for conflict within the groups.

The actual distribution in this village took place in 1975, under law No. 117 of 1970. In the files from this village there is no notation of activity on any file before 1975 (other than the initial committee approval for distribution); from 1975 to as late as January 14, 2003, 64 administrative notations appear in the files. Many of the earlier notes in the files relate to persons who had left Iraq. Their portions of the holdings reverted to the State Board and were ultimately redistributed as leasehold land. Thus, the amount of free distribution land that now exists in this village is reduced, primarily because any land that reverted to the government was reallocated as 25-year leasehold land.

The file notations indicate that from 1975 to 2003, approximately 22 percent of the holdings were altered in one manner or another. This figure is lower than would be anticipated. However, much of the land distributed in the 1970 agrarian reform was distributed to individuals who were over 18 but did not have lands of their own. Thus, most were relatively young at the time and the death rate among them should be relatively low. There were 30 deaths reported for this group; 23 of these had no heirs, so the land reverted to the government for reallocation; 6 of the deceased population had heirs, and the land passed to their wives or daughters. The implication that other persons were deceased and the land passed to sons is also raised, but there were no notations of a deceased person's land passing to his or her son. One of the deceased individuals lost the land because he was not farming it according to the prescribed plan, and it reverted back to the government for redistribution as leasehold land. The Director General agreed with me that the number of deceased persons seemed low. He pointed out that the State Board sometimes does not hear about a farmer's death for some time—as much as five years after the fact in some cases—which raises the possibility that the number of deceased individuals could be higher than reported, especially

[2] The Director General agreed that in the near future we should conduct field research at the village level to assess more accurately the administration of the tenure types. This cursory view is meant to show that the State Board for Agricultural Lands in indeed paying attention to its administrative duties and that management of agricultural lands is indeed in much better shape than most commentators have reported. We will soon have data from around Iraq that elucidates the manner in which land is being utilized, as well as a rather complete and more accurate picture of how land is now being managed.

since in a group holding the other members of the group would have an incentive to continue farming the same amount of land with one less member. In addition, it was mentioned in passing that extension services are weak, which compounds the problem of poor-quality information.

Among the notations were cases of 23 individuals who lost their land because they left Iraq; their holdings were treated as abandoned land. Six additional people who did not leave Iraq lost their land because they were either not farming it or not following the prescribed crop plan. In addition, there were five notations in the files relating to name changes and other minor administrative matters. We also reviewed the files with an eye to determining if the principal allottee was male or female. Of the files reviewed, 18 of the original allottees were women. In addition, a number of women received allocations as heirs.

In sum, the files reviewed were orderly, much as one would anticipate in a system managed by suitably educated and motivated officials, with clear notations concerning each individual who had received a free distribution. As noted, the administrative notations in these particular files appeared as late as January 2003.

Leasehold Land

There are two types of agricultural lease lands: private and governmental. In both cases it is expected that the process of planning will affect the manner in which the land is used for production. Thus, there is no significant difference whether the land is privately owned and privately leased or government-owned and leased to a private person.

Lease of Private Land

The lease of privately owned lands involves nothing out of the ordinary. If people have agricultural land in ownership, they can do what they pleases with the land as long as it does not violate any laws or regulations. Land law in Iraq includes no rules unfamiliar in other legal systems. A contract of lease can be structured taking into consideration any expectations or conditions an owner might have of the lessee's use of his asset. Iraqi land ownership excludes the subsoil as well as any mineral rights, which all belong to the government.

Lease of State Agricultural Land[3]

The lease of government agricultural lands is another matter. There are a variety of different configurations of government leases. They are all leases for 25 years, with reevaluation of the activity and rents every five years. The leasehold lands have been specifically allocated for the strategic crops: wheat, barley, maize, and rice. These rules were developed in 1983. They

[3] I was not present in Iraq long enough to examine the books and any administrative records on government leases. It is clear, however, that they exist as we had long discussions of rental payments and so on.

have varied slightly over the years given changes in the social situation in Iraq. For example, during the Iran-Iraq war, the government policy was to utilize all available lands. Thus, lessees were entitled to sublet the unused portions of their land. After the war the situation was changed and these subleases were, for the most part, held to be invalid and were cancelled. Lessees were not allowed to plant orchards or raise poultry, but in 1997 the policy was revised to allow orchards and poultry. Again in 2002 the policy was revised to allow olive trees on the leased land, as long as the olives cultivated were of a variety with high oil content and no more than 20 donums out of the entire parcel were set aside for this purpose.

There are restrictions on how many donums can be rented to a lessor. The limits allowed by the Presidential Council in 1997 were:

	Individual Lessee (donums)	Corporate Lessee (donums)
1) Irrigated Lands	2,000	4,000
2) Semi-Reclaimed Lands	4,000	8,000
3) Rainfed Lands	10,000	20,000
4) Desert Areas	30,000	70,000

The sizes of rental properties were made within the parameters set out above. The size was determined by the type of land (irrigated, rainfed, desert), the crop to be produced, and the fertility of the land, among other variables. It has been said that rental properties range in size from 1 to 53,000 donums. However, the usual size of a rental plot is 50 to 100 donums. Fertility is a major factor; middle-Euphrates rice land, for example, is among the smallest of the rental parcels.

In the early days of the government leasing program, in order to encourage leases the rental charges were minimal—one or two dinars per donum per annum.[4] As noted, the leases were for 25 years, but they were reviewed every five years and new charges were imposed. This policy existed until 1997, when the Revolutionary Council designated specific charges for each type of land. The following is a table of current charges. These are currently under review and it is expected that the rental prices will increase, although the Minister has delayed the rent increases until 2005.

[4] Of course, the exchange rate of the particular period was used. It sounds very low, but when the program commenced, the dinar was worth a lot more than it is now.

Rental Charges per Category of Land
as reported March 2004
(minimum applicable to the type of land involved)

Land Category	Dinar per donum per annum
Irrigated Land	
1. Reclaimed Land (irrigated w/drainage + all services)	800
2. Semi-Reclaimed Land (soil canals)	600
3. Unreclaimed Land (old irrigation systems)	500
4. Riverside Land	1,000
Rainfed Lands	
5. Guaranteed rain (over 400 mm per annum)	500
6. Semi-Guaranteed (close to 400 mm)	300
7. Un-Guaranteed (over 200 mm–good planting every 2-3 yrs)	100

The rent is collected by staff members of the State Board of Agricultural Lands and members of the Departments of Agriculture of the Governorates. Reportedly, the collection of rents generally goes smoothly (aside from the recent disruption). This is apparently so because the Ministry has the power to start the process through which a defaulter will be imprisoned. Thus, defaults in paying rent are minimal. Of the money collected, 5 percent goes into the budget of the MOA; 1 percent of that 5 percent goes directly to the members of the staff of the State Board of Lands. This self-supporting system provides a strong inducement to ensure that the collection level stays high. This system is not in place right now because of the war. We assume it will start again.

It is not legal for a person to sublet his government rental land. However, the right to the land lease or a part of it can be sold to a third party as long as the State Board for Agricultural Lands in the MOA agrees to the transfer. Applications for transfer of all or part of the rentals apparently constitutes the single biggest activity of the State Board. It was estimated there are approximately 15 applications a day for such transfers. A right to inherit the rights to rental lands also constitutes a high-level problem for the State Board because questions of inheritance have to take into account who the heirs of a lessee are and the legal minimum of the parcel. There are strong rules concerning maximum and minimum plot sizes that the government administers closely.

POLICY DIALOGUE

Our discussion also asked whether there was room for any change in land management policy for lands in general and agricultural lands in particular. The most prominent problem appeared to be that the State Board needs a general technology upgrade to do their work more efficiently and to have easy access to the full range of data they deal with on a daily basis.

Mapping and Registration

At the State Board we examined a number of maps of agricultural land. Parcels are noted chronologically on these maps. However, there is nothing on paper linking parcel numbers to registrants. Instead, registrants hold Tapus which validate their holdings should any change need to be dealt with. Certainly, lease records are current since rents are collected reliably.

We proceeded to discuss the 1932 and 1938 adjudication laws and the systematic adjudication that began during the British period and was carried out with the assistance of Indian committees. The adjudication was never completed and the last maps I was able to see were dated in the mid-1970s. (The formal adjudication took place between 1938 and 1970, and was continued in a modified form following 1970—it apparently has never been completed.)

It is estimated that approximately two-thirds of all land in Iraq is registered in one form or another, mostly with Tapus. However, as mentioned above, there is no linkage (on paper) between the maps and the actual information about the specific parcel of land. I was told that the lack of linkage is not a problem because the current staff of the State Board for Agricultural Lands is able to make the connection. I asked how this was possible, but it became clear that the staff's ability to deal with the lands rested on the fact that the staff people with whom I was speaking had, respectively, 41, 39, and 37 years of service. When these officials are no longer employed at the State Board, much of the information will be lost, as some of it has been already during the recent lootings and burnings of files.

In addition, the Tapu—a relic of the Ottoman Empire—records the land in the name of the head of household. This raises some rather thorny questions of family holdings and does not accurately reflect the real nature of parcel holdings. A system recording the individual who is actually in control of and working the land would be a necessity to avoid many of the problems raised by dealing with land holding that is recorded solely in the name of the head of household. The Tapu system also inherently excludes ownership by females (as very few are designated head of household), even though in practice women do inherit and hold land. It also does not allow for an equitable consideration between the sexes.

Therefore, it is suggested that along with a technology upgrade, the entire land registration system in both the Ministries of Agriculture and Justice be carefully reviewed to determine if it would be appropriate to introduce an integrated parcel-based land registration system. This would entail designing a register, a system of administration that could allow easy access to accurate information and the remapping of the entire country in a digitized format. It is noted that remapping could proceed very rapidly if this project started with existing, satellite-generated, global positioning system (GPS) images such as those available through the Eros Data System or other aerial data.[5] Ground surveys would follow.

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[5] The Eros Data Center of Sioux Falls, South Dakota can provide through its Earth Explorer program satellite images, aerial photographs, and cartographic products of most areas of the world. This source should be explored to determine how much of Iraq is already available on updated maps.

Privatization

Senior staff at the State Board feel that privatizing the government agricultural leasehold lands and the free distribution lands would be a positive step. The level of productivity differs in these two forms of land holding. For example, in the group holdings of the free distribution lands, unnecessary complications arise any time one of the group members dies or leaves the group. Since the holdings are corporate, there are no separate rights for each individual. Conflicts often appear at the time of change and the land can sit fallow for a number of seasons while the issues are resolved through the committee system that oversees this type of land. One can understand why it is often easier for the State Board and the extension officers to ignore potential changes in order to avoid long-term conflict. It would certainly avoid conflict and potential misuse of the agricultural lands (especially illegal subdivision) if these lands were privatized at this time and matters such as inheritance handled through the private sector, with the principal owner making the decisions about how his or her agricultural land should be passed on and divided within the limits of the law.

Further, it is arguable that it would be less of a strain on the machinery of government if the government leases of agricultural lands were also privatized. The argument is not to do away with planning for the cropping system, but to allow lessees more latitude in managing their own lands for agriculture. One should retain a minimum amount of each parcel under the government planning program, but also allow the person who takes ownership of the land to exploit a portion of it in the manner that would be beneficial to his or her situation. In addition, while the land would become registered to the owner, he or she would be able to lease it to others or make other arrangements for its use.

Finally, the “use lands” should be discontinued as a form of tenure. The government should establish a program making low-interest loans available to holders of use lands so they can exercise their option to purchase. The pricing mechanisms should be such that the government continues its revenue flow, but the goal should be to encourage persons holding use lands to purchase them.

The upshot of these measures would be that virtually all lands would be privately held. It would also allow persons with ownership to lease their lands, or deal with them in other ways that would be compatible with their way of life. Coupled with a modern parcel-based registration system and the necessary upgrade of technology, Iraq’s land assets should become increasingly productive.

CONCLUSION

The issues of land tenure and land management in Iraq are basically the same as in other countries. There is and has been an administrative system dealing with the different forms of land tenure, and this administration appears to have worked properly over the years. The issues today are a little more complicated because of the looting and destruction that took place during the downfall of the previous government. The main issues that must be faced now are the lack of some records which have disappeared and the fact that for the past 30 or

40 years, the government has failed to keep up with any form of technological reform in record-keeping. In addition, the land registration system is timeworn and should be updated. With all the events that have come together during the past 15 months, this is the time to recognize some of the changes that must be made and institute a program to modernize and update the land tenure and registration systems in Iraq, while acknowledging that the existing records and administrative personnel are in fact superior to those in many other post-colonial countries.

People Interviewed, March 17-23, 2004

1. Dr. Sabri Shamoon, Director General, State Board for Agricultural Lands, Ministry of Agriculture;
2. Mr. Mundra Muhamed, State Board for Agricultural Lands;
3. Mr. Peter King, Senior Advisor to the Minister of Agriculture;
4. Mr. Duncan Gilchrist, IPCC, CPA;
5. Dr. Sawsan Al-Sherify, Deputy Minister, Ministry of Agriculture;
6. Dr Zuhair A. Stephan, Director General of State Board for Agricultural Research, Ministry of Agriculture;
7. Ms. Saaba Mwahamad Amain, Ag Engineer, State Board for Agricultural Lands;
8. Mr. Magid Jasin, Ag Engineer, Director of Local Distribution, State Board for Agricultural Lands;
9. Mr. Maki Ahmad Ali, Ag Engineer, Director of the Land Department, State Board for Agricultural Lands;
10. Mr. Dead Ali Abad, Manager of the Technical Affairs Department, State Board for Agricultural Lands.

LAND TENURE AND AGRARIAN REFORM[6]

Iraq's system of land tenure and inefficient government implementation of land reform contributed to the low productivity of farmers and the slow growth of the agricultural sector. Land rights had evolved over many centuries, incorporating laws of many cultures and countries. The Ottoman Land Code of 1858 attempted to impose order by establishing categories of land and by requiring surveys and the registration of land holdings. By World War I, only limited registration had been accomplished and land titles were insecure, particularly under the system of tribal tenure through which the state retained ownership of the land although tribes used it.

By the early 1930s, large landowners became more interested in secure titles because a period of agricultural expansion was underway. In the north, urban merchants were investing in land development, and in the south tribes were installing pumps and were otherwise improving land. In response, the government promulgated a law in 1932 empowering it to settle title to land and to speed up the registration of titles. Under the law, a number of tribal leaders and village headmen were granted title to the land that had been worked by their communities. The effect, perhaps unintended, was to replace the semi-communal system with a system of ownership that increased the number of sharecroppers and tenants dramatically. A 1933 law provided that a sharecropper could not leave if he were indebted to the landowner. Because landowners were usually the sole source of credit and almost no sharecropper was free of debt, the law effectively bound many tenants to the land.

The land tenure system under the Ottomans, and as modified by subsequent Iraqi governments, provided little incentive to improve productivity. Most farming was conducted by sharecroppers and tenants who received only a portion—often only a small proportion—of the crop. Any increase in production favored owners disproportionately, which served as a disincentive to farmers to produce at more than subsistence level. For their part, absentee owners preferred to spend their money in acquiring more land, rather than to invest in improving the land they had already accumulated.

On the eve of the 1958 revolution, more than two-thirds of Iraq's cultivated land was concentrated in 2 percent of the holdings, while at the other extreme, 86 percent of the holdings covered less than 10 percent of the cultivated land. The pre-revolutionary government was aware of the inequalities in the countryside and of the poor condition of most tenant farmers, but landlords constituted a strong political force during the monarchical era, and they were able to frustrate remedial legislation.

Because the promise of land reform kindled part of the popular enthusiasm for the 1958 revolution and because the powerful landlords posed a potential threat to the new regime, agrarian reform was high on the agenda of the new government, which started the process of land reform within three months of taking power. The 1958 law, modeled after Egypt's law, limited the maximum amount of land an individual owner could retain to 1,000 dunums (100

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[6] U.S. Library of Congress, Federal Research Division, Country Studies: Iraq.

hectares) of irrigated land or twice that amount of rain-fed land. Holdings above the maximum were expropriated by the government. Compensation was to be paid in state bonds, but in 1969 the government absolved itself of all responsibility to recompense owners. The law provided for the expropriation of 75 percent of all privately owned arable land.

The expropriated land, in parcels of between seven and fifteen hectares of irrigated land or double that amount of rainfed land, was to be distributed to individuals. The recipient was to repay the government over a twenty-year period, and he was required to join a cooperative. The law also had temporary provisions maintaining the sharecropping system in the interim between expropriation and redistribution of the land. Landlords were required to continue the management of the land and to supply customary inputs to maintain production, but their share of the crop was reduced considerably. This provision grew in importance as land became expropriated much more rapidly than it was being distributed. By 1968, 10 years after agrarian reform was instituted, 1.7 million hectares had been expropriated, but fewer than 440,000 hectares of sequestered land had been distributed. A total of 645,000 hectares had been allocated to nearly 55,000 families, however, because several hundred thousand hectares of government land were included in the distribution. The situation in the countryside became chaotic because the government lacked the personnel, funds, and expertise to supply credit, seed, pumps, and marketing services--functions that had previously been performed by landlords. Landlords tended to cut their production, and even the best-intentioned landlords found it difficult to act as they had before the land reform because of hostility on all sides. Moreover, the farmers had little interest in cooperatives and joined them slowly and unwillingly. Rural-to- urban migration increased as agricultural production stagnated, and a prolonged drought coincided with these upheavals. Agricultural production fell steeply in the 1960s and never recovered fully.

In the 1970s, agrarian reform was carried further. Legislation in 1970 reduced the maximum size of holdings to between 10 and 150 hectares of irrigated land (depending on the type of land and crop) and to between 250 and 500 hectares of nonirrigated land. Holdings above the maximum were expropriated with compensation only for actual improvements such as buildings, pumps, and trees. The government also reserved the right of eminent domain in regard to lowering the holding ceiling and to dispossessing new or old landholders for a variety of reasons. In 1975 an additional reform law was enacted to break up the large estates of Kurdish tribal landowners. Additional expropriations such as these exacerbated the government's land management problems. Although Iraq claimed to have distributed nearly 2 million hectares by the late 1970s, independent observers regarded this figure as greatly exaggerated. The government continued to hold a large proportion of arable land, which, because it was not distributed, often lay fallow. Rural flight increased, and by the late 1970s, farm labor shortages had become so acute that Egyptian farmers were being invited into the country.

The original purpose of the land reform had been to break up the large estates and to establish many small owner-operated farms, but fragmentation of the farms made extensive mechanization and economies of scale difficult to achieve, despite the expansion of the cooperative system. Therefore, in the 1970s, the government turned to collectivization as a solution. By 1981 Iraq had established twenty-eight collective state farms that employed

1,346 people and cultivated about 180,000 hectares. In the 1980s, however, the government expressed disappointment at the slow pace of agricultural development, conceding that collectivized state farms were not profitable. In 1983 the government enacted a new law encouraging both local and foreign Arab companies or individuals to lease larger plots of land from the government. By 1984, more than 1,000 leases had been granted. As a further incentive to productivity, the government instituted a profit-sharing plan at state collective farms. By 1987, the wheel appeared to have turned full circle when the government announced plans to re-privatize agriculture by leasing or selling state farms to the private sector.

Data as of May 1988

ANNEX 11

MARKET RESEARCH ON MICROCREDIT IN RURAL AREAS: BASRAH REGION

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MARKET RESEARCH ON MICROCREDIT IN RURAL AREAS BASRAH REGION

EXECUTIVE SUMMARY

In March 2004, the Agriculture Reconstruction and Development Program in Iraq (ARDI), a USAID funded initiative aimed at supporting the agriculture sector in the country, conducted a market research study on microcredit in the southern governorate of Basra. The study covered over 10 villages around Basra town and interviewed 150 rural households.

The purpose of the research is to better inform ARDI's role in facilitating rural finance. The study looked at assets, incomes, expenses, past debt and future borrowing needs in order to inform potential credit providers as to product development and credit methodologies.

The major findings of the study are:

- Rural households are likely to own their own land and homes. While most do not own farm equipment, most households do own some animals, primarily cows and some chickens, which they mainly raise for household consumption.

- Rural households have limited incomes that just cover basic household consumption above and beyond the food they obtain from the national food distribution program. Incomes are generally insufficient beyond this and few households are able to save.

- Most rural households rely on multiple sources of income, and farm related income is not necessarily the most significant income source for a typical household.

- Nearly all households rely on free food from the Public Distribution System (PDS) as their main food supply. This is supplemented by their own production as well as some purchases from the market place. Some food insecurity is evident as many households are buying food with borrowed funds. Approximately 26percent of the households interviewed often buy food on credit from shops, while 40 percent indicated that they buy food with borrowed funds from family and friends.

- Borrowing is a common practice in rural areas, primarily from informal sources of financing such as family and friends. Additionally, some households buy food on credit from shops. Few have ever borrowed from formal sources such as the Agriculture Cooperative Bank.

- The need for financing is high, although the amounts requested, which average just under $4,500, are far beyond the typical rural households' capacity to repay. Affordability issues as well as lack of experience with formal credit providers caution against large loans to the rural poor.

The report concludes with some recommendations to credit providers that may be targeting rural areas.

BACKGROUND

This report is prepared as a supporting document to the work of the Agriculture Reconstruction and Development Program in Iraq (ARDI). One of ARDI's roles is to facilitate rural finance in the country. ARDI is currently in the process of advising the Ministry of Agriculture on a national strategy for agriculture, including rural finance covering support to both producers (farmers) as well as agri-enterprises. This paper looks at the demand side of the equation among rural households.

Due to the years of neglect under the Saddam regime, the southern region of Iraq is considered one of the poorest regions of the country. Rural market research was initiated in the South first as this is likely to be the area of focus for ARDI particularly in the first year of the program, although similar market research may be undertaken elsewhere in the country.

The study focused on the region around Basra town. Initially the aim of the research was to explore all southern governorates, however, due to security issues, this was revised and only villages where interviewers felt secure to travel were included.

METHODOLOGY

A survey of 150 rural residents in the surrounding villages around Basra town was undertaken during the week of March 7, 2004. The research utilized a standard questionnaire, which was developed in English and translated into Arabic. Six individuals affiliated with the College of Agriculture at the University of Basra were hired to conduct the interviews with rural residents. More than 10 villages were visited during the course of the research, some as far as one hour north of Basra town. Data analysis was undertaken utilizing a statistical software package.

Enumerators were instructed to interview any individuals residing in the villages, regardless of whether they were farming. This was done in order to capture the overall economic activity occurring in rural areas, including both on-farm and off-farm activities. In numerous cases, families had land but were not farming it due to a variety of obstacles such as irrigation, inputs, or other issues. Thus this survey captures both farmers and non-farmers residing in rural areas. Of those directly responding to the survey, 42.7 percent identified their primary employment as farmers, 18 percent identified themselves as government employees, 14.7 percent were self-employed, 5.3 percent were unemployed and the remaining were students or worked in the private sector.

DESCRIPTION OF SAMPLE

The majority of respondents interviewed were male (90 percent) and married (81 percent). Most respondents were literate (66 percent), although a smaller number (22 percent) were illiterate and had no formal education. Formal education varies widely with 27.3 percent of the sample only completing primary school, 13 percent completing middle school and 19 percent completing secondary school. Approximately 10 percent of the sample completed university. The mean age of the respondents was 44 years old. In addition to formal schooling, 10 percent of the sample had training in mechanics. Other types of training indicated included computers (2.7 percent) and medical training (2.7 percent).

The majority of households (63 percent) indicated that the husband was the head of the household while 22 percent indicated that the parents were the head of the households. As many extended families reside together, this is not an unusual finding. In only one case was a female the head of the household. Rural areas in the south are known for the traditional gender roles and these results support this generalization. In most cases, women refused to speak to an interviewer if the husband was not present. Given these traditional gender roles, reaching women directly through finance will be challenging, particularly if on-farm activities are the main priority.

The size of the households ranged from 2 to 45 members, with a mean of 12 members.

Surprisingly, the vast majority (98 percent) of the sample indicated that they obtained their main source of news and information from the television. Many also indicated the radio (64 percent) as an additional source. A negligible number indicated other sources such as newspapers or family members.

ASSETS

The overall findings on assets of the households reveal that in most instances the rural areas surrounding Basra have a certain level of asset wealth. Most households own their own homes and have some land holdings, animals and other assets.

House. Most families (94 percent) interviewed lived in an house (rather than an apartment) that they owned (83 percent). A small minority rented their homes either from commercial sources (3 percent), from subsidized sources (1 percent) or from their employer (1 percent). Other forms of arrangements were also identified (7 percent) and a small number of families (5 percent) were residing with extended family members. The majority of respondents (51 percent) reported their home to be in poor condition, 48 percent reported their home in good condition, while only 1 percent reported their home in excellent condition. Over 95 percent of sample has been residing in the same location for more than 5 years.

Land. A large majority (71 percent) of the sample owns its land. Of those who own land, only 5 percent lease it to other farmers. Of those who do not own their land, 40 percent are sharecroppers, 11 percent are using private land with free access, 5 percent are leasing the

land from a private source, 3 percent are getting free access from the state, 8 percent are leasing the land from the state and the remaining either don't know or have another arrangement. The mean amount of land owned is 14.72 donum[1] (min 1, max 200, standard deviation 32.57), while the mean amount farmed is approximately half of this at 7.71 donum (min 0, max 200 donum, standard deviation 25.68).

Vehicles. Only 24 percent of the sample owns a vehicle.

Animals and equipment. Table 1 below provides the detailed breakdown of responses regarding animals and equipment ownership. As can be noted, the most common animals owned are cows and poultry. Holdings for cows are relatively modest with a mean of just over 2 cows per household. The total value for cows was estimated at just under $1,000. Poultry represents the second most common type of animal owned by rural households, with over half of the families interviewed raising chickens. On average, the typical holding for poultry was just under 13 chickens per household.

With regard to farming equipment, very few households owned large equipment, with the most common holding being harrows. Water pumps were also a common holding with 43 percent of the sample owning a diesel water pump.

Table 1: Ownership of Animals and Farm Equipment Incomes and Expenses

Animals and Equipment	Freq	Percent own	Mean quantity	Mean Value (ID)	Mean Value (USD)
Cows	68	45	2.4	1,462,807	$975.20
Water Buffaloes	2	1.3	2	775001	$250.00
Goats	3	2	8.33	281250	$187.50
Sheep	31	20.8	8.53	764956	$509.97
Poultry	83	55.3	12.66	39664	$26.44
Water Pumps – diesel	65	43.3	1	503,679	$335.79
Water Pump - electric	22	14.7	1	238,235	$158.82
Plow	2	1.3	1	7,500,000	$5,000
Trailer	3	2	1	2,000,000	$1,333
Harrows	108	72	2.81	31,530	$21.02
Plastic sheeting	6	4	N/A	N/A	N/A
Pipes for drip irrigation	5	3.3	N/A	N/A	N/A
Sprayer	28	18.7	1.15	121,764.71	$81.18

While the rural areas may be relatively secure with regard to asset holdings, the situation is far worse from a perspective of cashflow. Monthly expenses for the typical household were reported as $234.46 (min $30, max $1,333, std deviation $190.23). At the same time, the mean monthly incomes were reported as $218.90 (min $3.33, max $2,000, std deviation

[1] Donum is equivalent to 1⁄4 hectare or 2,500 square meters.

$220.25). The income households need to meet basic household needs was identified as $365.55 (min $33.33, max $2,000, std deviation $344.41). This is over $130 more than what a typical household is currently earning. The majority of households (78 percent) reported that their monthly household incomes were insufficient to meet their basic needs.

It should be noted that income figures are often either overstated or understated depending on how the respondent perceives the survey. Thus most figures are not considered to be accurate representations of household incomes. However, most households report within a range or "band of truth." That is, it is likely that households misrepresent their true incomes somewhat, but that this is within a reasonable range, either above or below, their true income.

Expense figures are often a better indicator of income levels. Thus given that the expenses reported are only slightly above income levels reported, it could be assumed that most household incomes reported are reasonably close to the true figures.

SOURCES OF INCOME

To assess affordability of credit, the survey aimed to explore all household sources of income, and thus interviewees were asked about the various working members of the household and where they were employed. The three most common sources of income for a household were government or public sector employment self-employment and farm related income. Very few households relied on private sector employment or daily labor. Again, it is likely that individuals did not report accurately on all of their sources. The survey asked two different sets of questions regarding incomes sources and the figures did not correspond in most cases. In particular, many households seemed to understate their farm-related incomes and were uncertain how to categorize government employment. Furthermore, in one set of questions self-employment emerged as the most common household income source and in another set it was relatively equal with other sources.

Nonetheless, the important issue this brings to the fore is the fact that few households rely on only one source of income and that farm income is often complemented by either government employment or self-employment. Thus programs interested in the overall well being of rural households should consider both on-farm and off-farm activities.

With regard to the types of farming activities in which rural households are engaged in the Basra region, the vast majority cultivates date palms (66 percent) and vegetables (49 percent). Additionally, raising poultry is also a significant activity for many households (34 percent). A breakdown of all of the reported activities is presented in Table 2 below.

Respondents were asked whether the output produced was used for household consumption and if so, how much of the total production was used at the household level and not sold in the market place. As can be noted from Table 2 below, a significant amount of production is used for the household itself. This is particularly true for any dairy or poultry related production. Although the sorghum household usage is also high, the number of respondents is not significant and thus it is not sufficient to draw conclusions from this finding.

With regard to off-farm activities, the majority reported "other" which in most cases referred to public sector employment. Retail trade and services were the other types of activities in which rural households are engaged.

Table 2: Farming Activities

	Frequency	% Yes (Total Valid Responses)	% for Household Consumption
Date palms	99	66%	60%
Vegetables	73	48.7%	51%
Poultry	51	34%	85%
Dairy	19	12.7%	85%
Sheep rearing	13	8.7%	51%
Cattle breeding	11	7.3%	66%
Fruit	10	6.7%	53%
Wheat	5	3.3%	30%
Barley	5	3.3%	43%
Sorghum	2	1.3%	100%
Rice	0	0	0

Table 3: Off-Farm Activities

	Frequency	% Yes (Total valid responses)
Other	1	17.5%
Retail trade	16	11.1%
Service	15	10.3%
Fishing	9	6.2%
Food processing	7	4.8%
Production	5	3.4%

The mean number of household members that were reported to be involved in agricultural production was reported as 1.91 (min 0, max 15, standard deviation 2.13). The mean number of household members engaged outside of agricultural production was reported as 1.24 (min 0, max 6, standard deviation 1.19). These figures are considered to be under reported, as there seemed to be inconsistencies in the results obtained. For example, many households had identified that they had members working in the public sector, but then reported that they had no household members working outside of agriculture.

SAVINGS

In addition to incomes and expenses, the survey also asked several questions regarding savings. This is done as a check on income and expense figures reported as well as to assess

the faith in available banks or other financial intermediaries where deposits are kept in rural areas. A small number of respondents (15 percent) reported that they are able to save on a monthly basis. The mean amount of monthly savings that a household is able to save is $63.89 (min 0, max $333.33, standard deviation $75.44).

With regard to what households do with savings should they have any, 30 percent indicated that they would prefer to buy equipment if they had extra cash. A slightly smaller number would just keep the money at home (25.6 percent), or buy additional food for the household (11.5 percent). Very few indicated that they would store the savings in a bank (5.1 percent).

ASSISTANCE

Generally, few households receive assistance from outside sources other than food from the Public Distribution System (PDS). Nearly all rural households (97.3 percent) receive food distributions from PDS. Interestingly, 60 percent of these respondents say it is the main source of food for their families. Most households must supplement food obtained from the PDS and food they grow for their own consumption with purchases of food in the market.

Only 8.4 percent of households do not buy other food from the market. Most households (41.3 percent) buy less than 25 percent of their total food consumption from the market, while 30.8 percent buy between 26-50 percent of their total food consumed from the market.[2] With regard to other forms of assistance, only 6.8 percent of respondents receive any other assistance, which is normally offered from family or mosques. Furthermore, 5.7 percent acknowledged receiving remittances from abroad.

CREDIT HISTORY

Very few farmers have credit histories with the Agriculture Cooperative Bank[3] or any other formal lender. While 59 percent of respondents have borrowed in the past, the majority (95 percent) borrowed from family, friends and neighbors. The average loan size in past borrowing was only $148 and the outstanding balances on these past loans average $187. A very large number of respondents (41.1 percent) who borrow do so on a monthly basis while 25.6 percent do so once every 3 months. This is a relatively high frequency of borrowing and is perhaps an indication of the limited cashflow issues noted earlier. Table 4 below gives the most common uses of borrowed funds. Of note is the fact that over 40 percent of those who borrow regularly do so for buying food for the household. Borrowing for food is yet another indication of limited incomes that cover basic household needs.

The second most common use of borrowed funds is buying inputs for agricultural production. The fact that loan funds are used for investment purposes is a relatively positive indication and demonstrates that many households perceive the need for investment in order to increase

[2] The question was related to the value of food consumed and not the quantity.
[3] Only 2.2 percent reported borrowing from the Agriculture Cooperative Bank.

household incomes. It may also be an indication that some households can afford to do so and are not solely in need to supplement household basic consumption.

Table 4: Reasons for Borrowing in the Past

	Frequency	% yes
Buy food for the HH	46	40.7%
Invest in agricultural production	41	36.3%
Buy clothes	30	26.8%
Invest in small enterprise	26	22.8%
Save for emergencies / events	18	16.2%
Save to pay off debts	6	5.4%
Pay for school fees	1	0.9%

Given the relatively high prevalence of past borrowing, it is interesting to note that the majority (65.7 percent) of those who borrow indicate that they have difficulty in repaying debts.

Of the 6 respondents who had borrowed from the Agriculture Cooperative Bank, 66 percent had fully repaid their loan (4 respondents). Regarding the services obtained, 3 of the 6 respondents indicated that they did not like the services offered. The reasons provided were that the procedures were cumbersome, staff were not good, or "other." As the sub-sample of those with experience from the Agriculture Cooperative Bank is so small, these findings cannot be considered in any way conclusive. However, it is not uncommon for state banks to have worse customer services than private banks and some training and technical support to improve systems and services is likely needed.

In addition to borrowing from family and friends, 36 respondents (26.1 percent responding to this question) indicated that they bought food on credit from shops or the market. 85 percent of these individuals do so at least every month, while an additional 38 percent do so weekly. On average, households buy $36.20 on credit from shops. The outstanding debt for food consumption is $54.78, indicating that their balances are accumulating over time.

Only 11 respondents (or 8.7 percent of valid responses) reported buying agricultural supplies on credit. Of those who buy on credit, 97 percent reported to having done so from private supply stores and not the government agriculture supply sources. On average, loan amounts from supply stores were $307.27, with $110 of this still outstanding.

FUTURE BORROWING NEEDS

The majority of respondents (128 out of 150) or 85.9 percent of the sample indicated that they would borrow if they had the opportunity to do so. In many instances, interviewers had to clarify that this would be a formal source of finance and not just from family and friends. Thus the perceived need for credit is quite high.

The mean loan amount identified was $4,462.34 (min $167, max $33,333, standard deviation $5,257).

Uses of the loan. Respondents identified crop production and animal husbandry as the main uses of the loan.

Table 5: Overall Uses of the Loan

	Frequency	%
Crop production	76	52%
Animal husbandry	75	50%
Off-farm business	24	16%
Fix / buy house	24	16%
Buy land	16	10.7%
Other	11	7.3%
Other household expenses	7	4.7%

When asked to provide more specific details as to the use of the loan, respondents identified vegetables and fruit as the main crops to cultivate and cows, sheep and poultry as the main type of animals they were interested in purchasing.

Table 6: Crop Production Loan Uses

	Frequency	%
Vegetables	80	53.3%
Fruit	41	27.3%
Other	13	8.7%
Barley	11	7.3%
Wheat	8	5.3%
Rice	2	1.3%
Sorghum	3	2%

Table 7: Animal Husbandry Loan Uses

	Frequency	%
Cows	67	44.7%
Sheep	44	29.3%
Poultry	31	20.7%
Water Buffaloes	6	4%
Goats	2	1.3%
Other	1	0.7%

Source of credit. Despite the fact that most households rely heavily on family and friends for their existing loans, the majority are interested in borrowing from the Agriculture Cooperative Bank (57.3 percent) or another state bank (10 percent) rather than from family and friends (13 percent). As noted earlier, many individuals wanted clarification to the question regarding future credit and would only answer positively to that question if the source of credit were a formal source and not family or friends.

Guarantees. The majority of farmers can offer either their home (43 percent) or their land (30 percent) as collateral for the loan. An additional 14 percent prefer to offer guarantors. The survey asked a series of questions regarding groups and associations in an attempt to understand the potential for group lending or other types of associations linked to credit or marketing. The responses were interesting. Many respondents answered these questions as though the survey was gauging their political interests. This is due to the fact that many cooperatives and farmer's groups were indeed political under the former regime.

Only 37 percent of respondents were interested in participating in credit cooperatives and 37 percent were interested in group lending. However, 67 percent of the sample was interested in farmer's associations (marketing organizations).

It should be noted that these questions were cursory and not a lot of detail was provided to the respondents as to the types of associations or the meaning of group lending. To fully understand the issues related to these types of structures, it would be necessary to hold focus groups with select individuals to explore the issues at greater length.

Repayments, loan sizes, and loan terms. With regard to monthly repayment, households seem to recognize their limited cashflows and thus have identified very small monthly repayments. The largest number of respondents (36.7 percent) can afford to pay less than $25 per month, while only 17.2 percent can afford to repay between $25 and $50 per month. Thus over 50 percent of the sample interested in credit can afford to pay $50 or less per month.

There is a direct relationship between loan sizes and repayments. The higher the monthly repayments, the higher the loan amount can be. Given the monthly repayment range of between $25 and $50, the maximum loan size that should be considered is approximately $500, assuming a 1-year loan term.

The longer the loan term the riskier the loan. Thus, programs that aim to be prudent, particularly in the early stages when they are trying to establish a solid track record, should consider shorter loan terms. Assuming a 6-month loan term, the maximum loan size would thus be approximately $250. Approximately 22 percent of those responding indicated that they could afford between $51 and $100. These individuals would in turn be able to afford loans up to $1,000 (if 12 month terms) or $500 (if 6-month terms).

It is understood that loans will mostly be utilized for productive uses4[4] and thus it can be assumed that households will earn additional income to their current earnings. However, given the existing situation in southern Iraq, where families barely cover existing expenditures, it is prudent to assume only marginal increases in incomes available for loan repayment. It would be rational behavior for rural households to increase expenditures on meeting household needs as incomes increase, thus the proportion of income available for loan repayment will continue to be proportionally limited, despite income increases.

Fears. Many farmers, although wanting to borrow, had some hesitation in doing so. Fear of not being able to repay was the main reason indicated for this hesitation by 18.7 percent of the sample. An additional, 6.7 percent of respondents indicated that they would be hesitant to borrow since they had never done so before. Another 2 percent indicated that they had no form of collateral and an additional 2 percent did not want to do so for religious reasons.

IMPLICATIONS OF FINDINGS FOR MICROFINANCE PROGRAMS IN IRAQ

The findings of this survey point to many needs and challenges in rural areas in the south of Iraq. The role for credit providers is to tailor their products to meet the conditions identified. It is in this light that practitioners

Market Research in Rural Areas Basra Region speak of "meeting demand" with appropriate systems, requirements and loan parameters. At the same time, credit providers should aim to mitigate the risks that are evident in the market and among their potential clients. The following observations and recommendations aim to offer best-practice experience from lending to poor rural areas in other countries.

Credit culture exist. A very important positive element found in this survey is the fact that there is a tradition and history of borrowing and that there are no cultural or religious barriers to credit. While some individuals did indicate that they do not like to borrow or that they would not borrow if there were interest charges, the majority is familiar with borrowing and would not hesitate to do so if the opportunity arose.

Collateral is not a major constraint. As most rural residents own their homes and have some land, pledging either of these as collateral was not a major constraint as perceived by

[4] It is also understood that money is "fungible" and can be used for multiple purposes. It is common for a portion of the loan to be directed for non-productive purposes. It is difficult to limit the use of loans and the associated costs of ensuring proper usage outweigh the benefits. Programs normally monitoring clients periodically and this is considered sufficient deterrent for flagrant misuse of loan funds.

rural residents. On the other hand, there may be issues faced by institutions that aim to foreclose on property or land should clients not repay, particularly since houses and land values will be significantly larger than the loan balances outstanding. Programs may want to consider lending against other types of assets that are valued closer to the loan size.

Group lending was developed precisely to address the collateral constraints faced by the poor, both rural and urban based. Group lending allows for clients without physical collateral to use "social collateral" as a substitute. In southern Iraq, where collateral is not a constraint and where the experience with groups (farmer's unions and credit cooperatives) was political under the previous regime, it may be difficult to implement group lending programs. Thus programs interested in such methodologies are advised to conduct pilot tests before rolling out the methodology to various branches and locations. The same caution is advised for any form of credit programming based on group activity, such as credit cooperatives.

The interest in marketing associations, on the other hand, is high and programs may want to explore linkages that may exist between these associations and access to finance.

Affordability is a concern. While there is indeed a significant amount of borrowing taking place whether from informal sources such as family and friends or credit from shops for food purchases, there is some concern regarding households' cashflows and disposable incomes and their ability to absorb additional debt. As noted earlier, incomes are insufficient to meet basic household needs. Savings are few and far between. Debts are mounting for many rural households. Thus programs need to ensure that clients are not further indebted at levels that are unsustainable. Thus when determining the loan parameters such as loan sizes, terms and repayment frequencies, programs should package loans that balance their own need to maintain high standards of portfolio quality with products that are affordable to clients.

When affordability is discussed, many incorrectly assume that this means loans should have low interest rates or that the loan terms should be long in order for the monthly repayment to be small. This is not what is implied. Rather, years of experience from around the world have proven that best practices related to credit for vulnerable clients, such as those in the south of Iraq, include the need to ensure affordability of the loan. This has been best achieved through limiting the size of the loan, utilizing short loan terms to limit risk and starting with monthly repayment to instill credit discipline. The main aim under such a system is to allow clients to slowly increase household incomes to progressively afford larger loans over time. One loan is insufficient to meet any person's financial needs and thus programs should aim to build financial institutions that can continue to serve ongoing financial needs of rural households, one step at a time.

Start with standard, simple loan products. Given the profile of the potential rural clients and their desired loan usage, programs should offer standard products for the most common uses identified. These were fruit and vegetable cultivation and cows, sheep and poultry for dairy, meat and egg production. Although many households consume a substantial percentage of their agricultural goods, increasing production would allow them to reduce market purchases of these items thus freeing some of their household income and /or increasing their sales of these goods in the market place and in turn their household incomes.

The net effect is increased disposable income, and in turn improvement in their cashflow and their ability to repay the loan.

Given the much higher risk associated with balloon payments, it is advised to limit this option for repayment and instead focus on regular monthly repayments. Given the desired activities (eggs, milk, chicken, some vegetables), as well as the fact that households have multiple sources of income, monthly repayment encourages greater discipline and programs that require regular repayment (as opposed to balloon repayment) often have better portfolio quality. As programs gain confidence in certain clients based on their credit worthiness, it may be appropriate to extend credit with balloon payment options which are better suited for certain crops and livestock.

Gender issues will need to be addressed directly. The southern region of Iraq is relatively conservative and gender roles are traditional. Few women are engaged in market-based activities, although women may be involved in actual farm production.

Programs with a mission to serve both men and women equally will need to tailor their products so that women are included. This may entail offering loan products that are more attractive to women and less attractive to men. For example, while many men dislike group lending, many women in traditional societies prefer this form of lending, as they do not have sufficient collateral. [5]

Furthermore, the group structure gives them an opportunity to work with other women and to gain their support in their income generation activities. In some cultures, it is also desirable to offer a different product for women so that women are not perceived as competing with men. Thus in southern Iraq, it may be less threatening to male relatives if there is a special program or initiative for women. This study did not explore the many issues related to gender in the south and it is advised that programs conduct focus groups with both men and women to explore these issues at greater length.

[5] Inheritance laws under Islam favor male offspring with women receiving 1⁄2 that of their male siblings. In Iraq, the legal system is a mix of Islamic, Ottoman, British and other systems. It is not clear as to what is practiced in different regions of the country. Under Ottoman law, inheritance is to the male head of household and women are bypassed completely.