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## **ALTERNATIVE LIVELIHOODS PROJECT /EAST**

# **Perennial Horticulture in Eastern Afghanistan: Subsector Overview and Implementation Strategy**

**Juan M. Estrada**  
**Agribusiness and Marketing Consultant**

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## **PRESENTATION**

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*This document presents an overview of the perennial horticulture subsector in Eastern Afghanistan, with the objective of informing the strategic direction of future development interventions.*

*It incorporates an assessment of current production and marketing systems and the identification of strategic issues currently preventing the growth of the subsector, hence limiting the opportunities for the diversification of rural livelihoods.*

*The document concludes with a set of strategic guidelines and investment requirements for the implementation of ALP/E activities in support of the perennial horticulture subsector.*

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## ***Executive Summary***

There is historical evidence supporting the notion that perennial horticulture played an important role in the economy and culture of Afghanistan for many centuries. More than two decades of war and several years of drought resulted in the destruction of large orchards and with them the livelihoods of thousands of rural households.

This study presents an overview of the fruit and nut subsector in Eastern Afghanistan, with three fundamental objectives: a) Identifying the crops with greater potential in terms of market prospects, production possibilities (based on current production patterns) and farmers' preferences; b) Identifying key factors currently limiting the growth of the subsector, and c) Developing an implementation strategy for ALP/E that capitalizes on existing opportunities, while effectively addressing production and market constraints.

A rapid characterization of the distribution and size of existing fruit and nut orchards in Nangarhar, Kunar and Langhman allowed for the identification of four different types of orchards: a) Surviving commercial orchards of 1-2 jeribs, b) "Backyard" orchards following similar—intra-district—patterns in terms of size and composition (i.e. 12-20 trees of 4-5 species per household). This distribution pattern is presumably derived from the fact that a large number of those orchards were established through NGO support; c) Government orchards, consisting of some 2000 hectares of olive and orange groves currently managed by the Nangarhar Valley Development Authority (NVDA), and d) New NGO-promoted fruit and nut groves.

In terms of output, the bulk of fruit supply for the major markets in the region comes primarily from surpluses from backyard orchards and a smaller number of commercial groves. With very few exceptions, orchards are poorly managed; they have not been irrigated, pruned, trained or fertilized in several years, hence productivity levels reach only between 15 and 25 percent of their yield potential. Commercial orchards are scant and dispersed, while backyard orchards are small and highly diversified, thereby preventing rural households from breaking into the market. Similarly, while some of the government's olive orchards can be brought back into production with the potential to generate substantial income, there is need for the introduction of institutional arrangements that facilitate partnerships with private sector participants in order to overcome current management constraints.

Under current circumstances, rural households in Eastern Afghanistan tend to perceive small orchards as a source of fruit for the household with the potential to generate supplemental income, but have not yet realized the real economic potential of this activity. According to farmer interviews, this is due to three fundamental reasons: a) in the past, poppy production constituted one of the main sources of income, which drove farmers' attention away from fruit production, b) most of the farmers' efforts are now geared towards staple production to ensure food availability, and c) fruit trees are perceived as an investment that will not yield returns in the immediate future. These factors, coupled with the recent repatriation of families from Pakistan, urged to struggle for their survival have diverted their attention from increasing fruit productivity.

The influence of these production constraints is further augmented by absence of minimum efficiency scales, derived from the high degree of dispersion of production, as well as the absence of horizontal coordination at production level, that could otherwise facilitate farmers' access to

modern crop production technologies, reduce transaction costs, and increase their bargaining power.

Post-harvest management practices are also poor, negatively influencing profitability. On average, post-harvest losses account for eleven percent of the crops observed during field research (range 5-18 percent). This has a significant effect on profitability and needs to be properly addressed by increasing awareness among producers and traders, as well as by enhancing their technical capacity to improve post-harvest handling practices and harness greater economic benefit.

From a marketing standpoint, the supply chain for fruit and nuts is a truncated system, with farmers, community-level traders, wholesalers and retailers at the center, but with neither forward linkages to agro-processing or value adding of any sort, nor backward linkages with nurseries, input suppliers or providers of technical assistance.

This “shortened” supply chain further limits the prospects for the development of the subsector as there are no push or pull factors, in the form of crop production technologies and profitable market opportunities that could otherwise increase the flow of produce.

The compounded effect of these constraints added to the absence of investments in value adding, from the most basic in the form of grading and packaging to cold storage and agro-processing, and absence of market information, preventing rural households from realizing economic benefits from crop production.

These findings depict a scenario in which rural households lack the technical and often financial capacity to increase crop productivity and enhance farm-gate quality, while due to market inefficiencies (e.g. poor price transmission and absence of market information) they are unable to perceive and respond to market incentives.

Notwithstanding the many challenges facing the perennial horticulture subsector in Eastern Afghanistan, one of the most important assets of the region is its germplasm; local fruit and nut varieties are rich in market-sought attributes and therefore have the potential to compete with world-class producing countries. Thus, availability of quality germplasm coupled with the fruit and nut producing tradition of the country and strong market incentives have the potential to reactivate the industry, turning it into a major opportunity for economic development.

The current scenario characterized by low productivity and abundant market inefficiencies will require a comprehensive effort that integrates a well balanced mix of production and market interventions. Balancing these two areas is crucial especially considering that the subsector is currently stagnant and there is need to match production to market demand, while addressing the strategic issues previously identified in order to reactivate the supply chains.

Developing an appropriate strategy brings about two challenges; on the one hand a lack of reliable information regarding regional production, production possibilities of the participating communities (i.e. in terms of agro-ecological conditions), farm-level financial data and regional trade statistics; while on the other hand the imperative to jumpstart the rural economies through high-impact and low-risk market-oriented activities.

Based on these premises, this undertaking will require a two-pronged strategy aimed at capitalizing on existing resources to increase productivity, farm-gate quality and facilitate efficient market linkages in the short-term, while building the foundation for the development of a strong fruit and nut industry as part of a medium-term strategy.

The short-term strategy will be based on three basic pillars; a) Improvement of agricultural productivity and farm-gate quality, b) Formation of collective marketing groups, and c) Facilitation of market linkages.

This implementation approach will reach 10 priority districts in the provinces of Kunar, Langhman and Nangarhar currently growing apricot, orange, persimmon, peach, apple and almond; facilitate the establishment of a total of 60 collective marketing groups representing some 3000 small fruit and nut producers, and link them to wholesalers and traders in Kabul and Jalalabad. Productivity will be increased by a minimum of 40 percent; post harvest losses reduced to an average of 5 percent and farm-gate prices will be increased by a minimum of 20 percent. The latter will be the result of the improvement of market efficiency through the provision of market information, the facilitation of collective marketing arrangements and reduction in transaction costs.

The medium term strategy is aimed at developing the productive potential of the region, through the establishment of new orchards being privy to the concepts of economies of scale, productive capacity of each micro-region and collective marketing. This is what in essence will rebuild the region's fruit and nut industry, with long-term implications in terms of economic development.

Based on these premises, the medium-term strategy for the development of perennial horticulture will consist of four major elements: a) Identification of target markets, crops and communities, b) Establishment of new orchards, c) Building local capacity to meet market requirements, and d) Inclusion of beneficiaries in complementary income generating activities.

The medium-term implementation strategy will target 16 priority districts in the three provinces in the Eastern Region promoting the establishment of commercial-scale fruit and nut production clusters in areas with optimal conditions in terms of agro-ecology and market access. This will involve activities complementary to those under implementation in partnership with IF-Hope, increasing area under new orchards to six thousand hectares of high-value perennial crops. The selection of crops will privilege the 6 species with greater potential in terms of market demand, profitability and opportunities for value adding, information that will be available from detailed market studies—part of the proposed strategy. Technical assistance and other capacity building activities will focus in enabling farmers to meet market requirements (e.g. varieties, minimum delivery volumes, grades and standards and packaging, among others). ALP/E will make an effort to include participating households in alternative income-generating activities whilst orchards achieve production stage.

## I. SUBSECTOR ASSESSMENT

### **INTRODUCTION**

Perennial agricultural crops have played an important role in the rural communities of Afghanistan since time immemorial; evidence of this is the large number of specialty crops consumed worldwide, whose origin can be traced to this region. More recently, anecdotal evidence suggests the existence of formal trade in dried fruit and nuts from Afghanistan since as far back as the 1940s. These included apricots, figs, raisins and almonds, among others, to the regional and international markets, especially to the New Delhi Dried Fruit Market, where even in the midst of the Taliban regime Afghan raisins and apricots were still holding a 15 percent market share (The Hindu, 2001).

The deterioration of the political and security situation throughout the country in the 1980s and 1990s led to the disruption of local markets, especially due to the destruction of market infrastructure and increased risks for traders. These factors—among several others—encouraged the partial abandonment of perennial crops, and in many cases, their substitution with poppy production; which benefited from the lack of rule of law.

Given the revived interest of the Government of Afghanistan in reducing production of illicit crops throughout the country, there is need to identify and support the development of high-value horticultural crops with the potential to promote the sustained growth of the rural economies, while—in conjunction with deterrent measures—discouraging poppy production.

Within this context, there is need to design a strategy for the development of competitive subsectors within perennial horticulture. In order to be effective, such a strategy needs to be based on reliable assumptions about production potential, current constraints and opportunities in production and marketing, and most importantly on a broader understanding of the dynamics within the value chain.

It is within this framework that this subsector overview aims to respond three fundamental questions:

1. Which perennial crops have the highest potential to contribute to the rural economies in Eastern Afghanistan?
2. What are the main factors, at production and marketing levels, constraining the growth of this subsector?
3. What specific interventions need to be implemented in order to facilitate the sustainable and profitable expansion of key perennial crops?

Answering these questions is important because: 1) there is evidence supporting the notion that perennial horticulture is still an important component of the rural economies. However there are substantial obstacles to overcome in order to make this subsector a key driver of economic growth in Eastern Afghanistan, 2) in order to have a positive impact in the development of the rural economies, ALP/E needs to develop implementation strategies that are responsive to crucial factors affecting crop production and marketing, and 3) optimizing

the use of resources and maximizing impact requires a well-focused strategy that opens the bottlenecks for the development of the subsector, while introducing a well-balanced mix of incentives and capacity to allow private sector actors to respond to market stimuli.

Based on this framework of ideas, the proposed study will present: a) an overview of the structure of the perennial horticulture subsector in the region, with greater focus on the characteristics of production systems and the structure of marketing channels; b) a summary of the main constraints for subsector development in the areas of production and marketing, and c) an implementation strategy for ALP/E, including a prioritization of development interventions.

This report does not claim to be exhaustive in nature, especially considering the following factors:

- a) Security-related constraints to mobilize freely into the rural areas, which limited the sample size, thereby preventing the assessment of remote areas that could potentially be producing perennial crops as well as the use of quantitative analysis
- b) The geographic focus of the study relied heavily on the experience of key informants, which while constituting an asset, also brought about the risk of regional bias
- c) The study was carried out in the winter season, which had obvious implications for the quantification of production

Notwithstanding these circumstances this study provides an overview of the current state of the perennial horticulture subsector in Eastern Afghanistan, as well as the several challenges and opportunities for its development.

## **1. Methodological Approach**

Subsector analysis, as proposed by Shaffer (1973) French (1974) and Staatz (1996) constitutes a tool to describe and gain in-depth understanding of the interrelations between input suppliers, producers, traders, processors, importers/exporters and other participants in the commodity subsystems. It allows for the examination of the incentives, risks, constraints and opportunities influencing the decisions of these actors. However, recent work (Martinez, 2003) has shown that beyond being a descriptive construct, subsector analysis can also benefit from the integration of quantitative data in order to better understand commodity flows.

While Value Chain Analysis is regarded by many agribusiness researchers as an alternative methodology for the study of the agrifood chains due to its ability to disaggregate data and look at individual production units. Notwithstanding these potential advantages, data constraints prevented its use in the context of this study. Therefore Subsector Analysis was identified as the most appropriate framework to gain in-depth understanding of the structure as well as the factors constraining the development of perennial horticulture. Considering the appropriateness of this methodology on basis of data availability, the ability of subsector



analysis to depict the structure of the production and marketing system, identify the main sources of inefficiency and contribute to the development of subsector-level strategies.

The study was carried out between December 2005 and January 2006 and included six districts in the provinces of Kunar, Langhman and Nangarhar, in Eastern Afghanistan. In carrying out this task, field visits were planned based on consultations with officials from the Ministry of Agriculture, non-governmental organizations and ALP/E senior agriculture staff regarding the location of the main fruit producing areas. Fruit and nut traders in the Jalalabad fresh produce and dry fruit markets were also consulted in order to identify their sources of supply, seeking to direct the field visits to the districts with the greater probability of having fruit and nut orchards.

The first contact in the field was with district-level agricultural extension officers, who were in turn asked to direct the team to the areas with the greater concentration of fruit and nut trees. Thus every effort was made in order to narrow down the geographic focus of the study to the areas with the highest likelihood of having orchards at production stage.

Table 1 presents the selection of districts and villages, which according to key informants represented the areas with highest concentration of tree fruit and nut orchards and could potentially be at the center of future project activities.

**Table 1. Geographic Scope of the Perennial Horticulture Assessment**

<b>Province</b>	<b>District</b>	<b>Village</b>
Kunar	Noorgal	
Kunar	Khas Kunar	
Laghman	Mehtarlam	Chardehi
Laghman	Qarghayi	Mashina
Nangarhar	Behsood	Jamalee
Nangarhar	Surkhrod	Shamshapur
Nangarhar	Ghanikhil	25 Viala

During field visits, district extension officers and lead farmers were asked to assist the team in the identification of orchards.

Once in the farms, farmer interviews focused in the composition, age and productivity levels of their orchards; their relative economic importance within the household economy and their interest in terms of the expansion of area grown to fruit and nuts. They were also asked about current market outlets, prices and the major factors affecting profitability.

This information was complemented with in-depth interviews with fruit traders in the Jalalabad dried fruit and produce wholesale markets, NGOs currently implementing agricultural programs and government officials.

## 2. Presentation and Discussion of Findings

Contrary to the conventional perception of the fruit and nut subsector in Eastern Afghanistan, which is widely conceived as composed by large and ancient orchards that could be renewed in a relatively short period of time, we invariably found that most commercial orchards had been destroyed by lack of management (mainly lack of irrigation and fertilization) during the war.

For the purpose of this study, orchards were grouped in four categories:

- ***Surviving commercial orchards.*** These typically consist of 1-2 jerib orchards planted some 15-25-years ago. While in the field, we visited 2-3 of such orchards in each district, most of them in poor condition due to lack of proper irrigation, pruning, fertilization and disease control.
- ***Backyard orchards.*** These are the norm in the region; they typically consist of 8-20 trees of different species and in different stages of development, planted inside or adjacent to residential compounds. A large percentage of the trees (i.e. about half) are 20 years or older and were planted before farmers' exodus to Pakistan. The remaining portion consist of young trees (mainly citrus) planted in the last 4 years with support from NGOs. Given the high degree of similarity in the size and composition of backyard orchards within the districts, presumably derived from the fact that many of them were established a part of regional development programs, the assessment relies heavily on district-level characterization.
- ***Government-owned orchards,*** Composed of over 2,170 hectares of olive orchards and 70 hectares of orange groves divided in 4 state-owned farms under the management of the Nangarhar Valley Development Authority (NVDA). These orchards have not been adequately managed in over 20 years, therefore production levels are quite low. Olive production was in the past linked to an oil expelling and brining factory, which re-opened in 2005 producing 50MT of olive oil, as compared with an installed capacity of 500MT of oil and 4000MT of olives in brine.
- ***New, NGO-promoted fruit and nut groves.*** These include 126 hectares of small orchards (typically 0.5-1.0 jerib) established in the last 4 years by Madera and Relief International. Although in general most of these orchards are in acceptable phytosanitary condition, they have not been properly managed, which has resulted in low productivity, even considering their young age. Additionally, about half of these orchards consist of a disperse collection of different species, which further limits farmers' ability to break into the market.

Despite the enormous potential of Eastern Afghanistan for tree fruit production, under the current circumstances none of these four categories of orchards are currently of significant economic importance for farmers the region. The few surviving commercial orchards are poorly managed, productivity in general is low and—with a few exceptions—they generate little income (e.g. US\$200/jerib/year).

In the case of backyard orchards, producers would either consume the fruit within the household or sell to traders on a per-tree or per-jerib basis—depending on the type of orchard—generating an average income of 300 Afghanis/tree/year. This figure, extrapolated to the average number of trees sold by household traduces in an average of US\$24 per household per year.

Typically, small farmers would sell small surplus quantities mainly to community-level traders dealing with a variety of crops. Such traders would assemble and transport the commodities to the Jalalabad Wholesale Market, from where are further distributed within the region, as well as to Kabul and Peshawar (Figure 1).

Lack of economies of scale in production, absence of horizontal coordination among farmers, and a lack of profitable market opportunities for small producers have enabled informal traders to benefit from monopsony. The latter, coupled with high levels of post-harvest losses and prohibitively high transport costs have had concomitant effects in terms of reducing the incentives for farmers to invest in fruit and nut production.

Although there were substantial similarities across the region, we present below a summary of findings in each of the three provinces that were visited.

## 2.1. Kunar

### 2.1.1. Khas Kunar

Of the two districts visited in Kunar Province, Khas Kunar has the greatest agro-ecological potential for fruit and nut production; located at the banks of Kunar river, the area is characterized by marked seasonal changes, but mild winters—with no frosts, clay loam soils and relative abundance of land that allows for the establishment of commercial orchards.

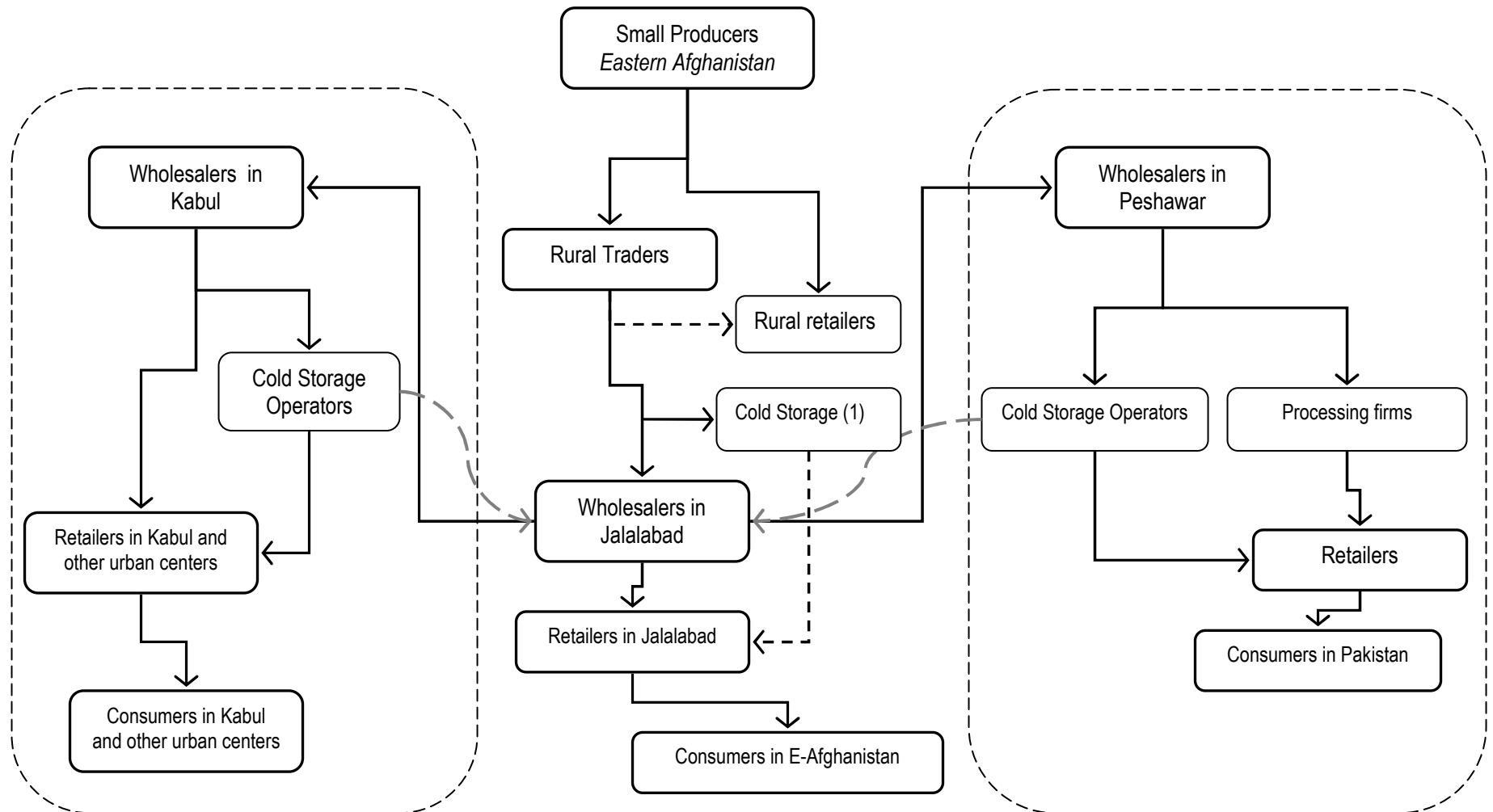
As of now, a major shortcoming for the district has been the bad condition of the road that connects to Jalalabad, which has resulted in prohibitive transportation costs. However, there are indications that the pavement of the road will be concluded in the next 6-8 months, which will greatly improve the probabilities of success of small farmers in Khas Kunar, by substantially reducing transport costs.

**Table 2. Characterization of Existing Orchards, Khas Kunar. Typical Orchard, Dec, 2005.**

Crop	Trees/household	Main problem	Current Income generation	Ranking Future interest
Plum	2	1,2	0	Orange
Apricot	4	1,2,3	Af500 (US\$10)	Persimmon
Citrus	4	1,2,3	Af1000 (US\$20)	Guava
Guava	2	1,2	0	Banana
Date	1	1,2	0	Grapes
Loquat	1	2,5	0	Stone fruit
<b>Aggregate</b>	<b>14</b>		<b>US\$30</b>	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

Figure 1. Structure of the—generic—Value Chain for Fruit and Nuts in Eastern Afghanistan, 2006.



As illustrated by Table 2, the *typical* orchard in Khas Kunar is composed of 14 trees, including plum, apricot, citrus (usually a 50/50 split between orange and lemon with an occasional tangerine tree), guava, date and loquat. Although productivity is generally low (i.e. below 20 percent of the production potential) it is not generally perceived by farmers, due to the fact that most of the produce is consumed inside the household.

Most orchards visited in Khas Kunar were located inside residential compounds; they had not been trained, pruned or fertilized for several years and were often attacked by fungal diseases and pests (e.g. rust in deciduous fruit and black scale in citrus).

There were, however two exceptions to the rule; three relatively well managed plum and apricot orchards (1-3 jeribs). In the case of plums, it was reported that the owner had sold the production from his 3-jerib farm in bulk with a gross revenue of Af225,000 (US\$4500) depicting the potential for the establishment of fruit orchards if the issues of *minimum efficiency scale (MES)*, *productivity and market linkages* are effectively addressed.

An aspect to take into consideration is that currently, most farmers in Khas Kunar are only now re-adjusting after their repatriation from Pakistan and have started by focusing their efforts in staple crop production, devoting little attention to fruit trees and their economic potential, which is reflected in the current economic role of fruit in the household economy, which typically represents an income of Af1500/year (some US\$30).

There are some efforts by the *Mission d'Aide au Développement des Economies Rurales* (MADERA) through the provision of fruit trees and the study and facilitation of marketing systems in Khas Kunar. However, anecdotal information suggests that the composition of the “tree packages” in terms of number and selection of species may not be the most appropriate for commercial purposes, considering the need for economies of scale. This is an aspect that needs to be further explored.

As shown in column 5 (Table 2) farmers interested in engaging in commercial fruit production have a strong preference for orange (including sour and blood types), persimmon, guava, banana, grape and stone fruit. Although this ranking is heavily influenced by their own perceptions about market prospects in Jalalabad, it will be appropriate to take them into consideration for future programming activities, together with more reliable market data.

### **2.1.2. Noorgal**

In contrast with Khas Kunar, Noorgal has substantial advantages in terms of access to markets. Not only it is closer to Jalalabad—the main market in the region—but it is on the main road that connects Jalalabad and Asadabad, with dozens of roadside stands, hence easy and direct access to wholesale and retail buyers. However, agro-ecological conditions are substantially different, with heavier soils, as well as smaller landholdings presumably derived from higher population density.

Despite relatively favorable market prospects, the bulk of fruit production takes place in small “backyard orchards” with an average of 16 trees divided into two conspicuous groups; older trees (20 years old in average) planted before the war, and younger trees most of which were distributed by MADERA in the last 4 years. As in the other provinces visited, the orchards were not properly managed; distance between trees was often uneven, none of them had been trained, pruned or fertilized and productivity is low in general.

Although the selection of crops was relatively large with orange and pomegranate as the most common; followed by apricot, quince, apple, walnut, mulberry and grapes; oranges, apples and occasionally pomegranates were the only ones commonly marketed.

**Table 3. Characterization of Existing Orchards, Noorgal. Typical Orchard, Dec, 2005.**

<b>Crop</b>	<b>Trees/household</b>	<b>Main problem</b>	<b>Current Income generation</b>	<b>Ranking Future interest</b>
Orange	5	1,3	Af1675 (US\$33.5)	Persimmon
Pomegranate	3	1	0	Peach
Apricot	2	2	0	Citrus
Quince	2	2,3	0	Apple
Apple	2	3,4	Af500 (US\$10)	Guava
Other*	2	1,2,5	0	Quince
<b>Aggregate</b>	<b>16</b>		<b>US\$43.5</b>	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

\*In the case of Noorgal, there were small numbers of walnut, mulberry trees and grapevines.

Among the main problems reported by farmers were low productivity of orange groves drought intolerance in apple trees—the latter perceived as having good market prospects. Oranges are typically sold “by the tree” at prices between Af300-350 per tree and apples at an average of Af12/Kg.

As in most rural communities in the region, farmers perceive small orchards as a source of fruit for the household with the potential to generate supplemental income, but have not yet realized the real economic potential of this activity. According to farmer interviews, this is due to three fundamental reasons: a) in the past, poppy production constituted one of the main sources of income, b) most of farmers’ efforts are now geared towards staple production to ensure food availability, and c) fruit trees are perceived as an investment that will not yield returns in the immediate future. These factors, coupled with the recent repatriation of families from Pakistan, urged to struggle for their survival have diverted the attention away from increasing fruit productivity.

Notwithstanding the focus on immediate needs, during the field interviews, farmers showed interest in engaging in commercial production of persimmon and peach, while increasing the area grown to citrus. They are also highly interested in finding an apple variety that is less susceptible to drought, as well as increasing the area grown to quince and guava (Column 5, Table 3).

## 2.2. Laghman

### 2.2.1. Mehtarlam

Fruit and nut production in Mehtarlam is often limited to backyard orchards, which are somewhat diversified, including citrus, persimmon, pomegranate, apricot, pear, peach and an occasional grapevine. As in Kunar province, the typical household would have 15 trees devoting most of the production for household use. Occasional surpluses, especially of orange and pomegranate are sold to rural traders.

There are a few citrus groves established some 30 years ago. Notwithstanding the fact that they are still producing, their output only reaches 15-20 percent of their yield potential. According to farmers, this is the result of outward migration, recurring droughts and lack of incentives to invest in orchard maintenance due to low market prices. Nonetheless, according to farmers, pests and diseases do not constitute major constraints for fruit and nut production in the area.

An aspect worth to note is that the village of Chardehi is home to over 10 small tree nurseries that in total produce over 50,000 saplings per year. Given the climatic conditions of the area, these nurseries are able to produce saplings of varieties that are suitable both for lowlands and highlands, and could undoubtedly constitute a potential source of germplasm for the region.

Fruit markets are still underdeveloped; high transport costs derived from poor road conditions, coupled with highly dispersed production and ungraded produce result in low farm gate prices. An aspect worth noting is that farmers market their produce individually, which further weakens their bargaining power. Nonetheless, a slight difference in the composition of the typical orchard and relatively geographic proximity to Jalalabad—as compared to Khas Kunar and Noorgal—has allowed rural households to receive slightly higher revenue from fruit sales, reaching the equivalent to US\$64/year from citrus alone (Table 4).

**Table 4. Characterization of Existing Orchards, Mehtarlam. Typical Orchard, Dec, 2005.**

<b>Crop</b>	<b>Trees/household</b>	<b>Main problem</b>	<b>Current Income generation</b>	<b>Ranking Future interest</b>
Citrus	8	1	Af3200 (US\$64)	Citrus
Persimmon	2	1	0	Guava
Pomegranate	2	1	0	Apple
Apricot	1	2	0	Persimmon
Pear	1	2	0	Pear
Peach	1	2	0	
<b>Aggregate</b>	<b>15</b>		<b>US\$64</b>	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

Farmers in Mehtarlam are interested in establishing citrus, guava, apple persimmon and pear orchards to supply the Jalalabad market, based on the assumption that they could easily compete with Pakistani imports.

### 2.2.2. Qarghayi

Table 5. Characterization of Existing Orchards, Qarghayi. Typical Orchard, Dec, 2005.

Crop	Trees/household	Main problem	Current Income generation	Ranking Future interest
Citrus	5	1	Af1200 (US\$24)	Apple
Pomegranate	3	1,2	Af560 (US\$11)	Pear
Pear	3	1,2	Af300 (US\$6)	Citrus
Apricot	2	1,2,3	Af375 (US\$7.5)	Apricot
Persimmon	2	1,2,3	Af300 (US\$6)	Grape
Others*	2	2,5	Household use	
<b>Aggregate</b>	<b>17</b>		<b>US\$54.5</b>	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

\* normally apple and grapes

Qarghayi district borders Nangarhar and the administrative center of the district is little over 30 kilometers from Jalalabad. The district is in the banks of Alishing River, which constitutes the main source of water for agricultural production. Topography is slightly irregular, soils are clay loam and elevation at the urban center of the district is slightly below 600 meters above sea level, which allows farmers to produce vegetables year-round.

Consistent with the pattern found in other districts; most of fruit production in Qarghayi takes place in small orchards located in residential compounds, with a very high degree of similarity among households with respect to composition (i.e. total number and species of trees).

Similarly, there is evidence of ongoing activities in support of the establishment of small orchards (1/2-1 jerib) with assistance from NGOs such as Relief International and BRAC (funded by WFP). However, from observation and discussions with farmers, the emphasis has been on the establishment of “diverse” orchards, while disregarding the importance of economies of scale in harnessing market opportunities.

As shown in Table 5, the typical composition of productive-age orchards located inside residential compounds would include 5 citrus trees (mainly orange), 3 pomegranate trees, 3 pear trees, 2 apricot trees, 2 persimmon trees, complemented by 1-2 grapevines and/or apple trees. Most trees inside residential compounds are 15-20 years old, planted at uneven distances, and have not been properly managed to realize their productive potential. From observation and farmers’ indications, fruit trees are not seen as an essential source of income, but rather as a source of food for the household, which partially explains the lack of investment in their maintenance.



## 2.3. Nangarhar

### 2.3.1. Behsood

**Table 6. Characterization of Existing Orchards, Behsood. Typical Orchard, Dec, 2005.**

Crop	Trees/household	Main problem	Current Income generation	Ranking Future interest
Citrus	4	1	0	Citrus
Pomegranate	4	1	0	Pomegranate
Peach	3	1,2	0	Apple
Plum	2	1,2	0	Pear
Apple	2	1,4		Apricot Plum
<b>Aggregate</b>	<b>15</b>		----	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

Behsood, located in the outskirts of Jalalabad is an area mainly dedicated to vegetable production. Although it has historically been a fruit production area, the orchards were badly damaged during the war, most of which cannot be brought back into production. A few small orchards inside residential compounds survived war and drought and are still producing small quantities of fruit, mainly for household consumption. As shown in Table 6, the typical orchard would include 4 citrus trees (e.g. lemon, orange and tangerine), 4 pomegranate trees, 3 peach trees, 2 plum trees and 2 apple trees.

Derived from the unique circumstances that have affected agricultural production in the last decade, these small orchards are in poor condition and their recovery—though possible—would have little effect in the household economy. Currently these orchards are producing at below 15 percent of their yield potential and most of the fruit is consumed by the household.

However, the area has obvious potential for production of tree fruits, especially citrus and deciduous. This is evident in the various tree nurseries that have been established and are currently supplying NGO requirements (e.g. Relief International).

Relief International and other NGOs are also working in the area establishing small orchards by providing farmers with “tree packages” containing 80-120 trees, enough for 1-2 jeribs. The impact of this intervention will be observable in the next 2-3 years. Nonetheless, there are a few deficiencies that need to be corrected, like the provision of technical assistance in planting (mainly spacing), fertilization, training and pruning, as some of the young orchards are already adopting erratic growth patterns, which would undoubtedly compromise productivity.

A few farmers reported occasional sales to traders, who in turn sell to wholesalers in Jalalabad, which is in itself an indication of the existence of weak and occasional market linkages that could be capitalized on. However, there is need to encourage greater coordination among small farmers, even before the establishment of new orchards, in order to ensure the achievement of minimum efficiency scales.

The crops farmers in Behsood are mainly interested in producing include citrus (especially lemon and orange), pomegranate, apple, pear, apricot and plum, which are perceived to have good market prospects in Jalalabad.

### 2.3.2. Shinwar (Ghanikhil)

This district, situated some 55 kilometers east of Jalalabad has been, according to key informants, a major poppy cultivation area. The topography of the area is reasonably flat with a few escarpments, with clay loam soils, functional irrigation systems and good access roads. According to indications from farmers and field technicians from partner NGOs, the area was a major center for fruit production before the war. The latter is evident from remnants of older orchards.

In contrast with prior findings in Langhman and Kunar, Ghanikhil district has a larger number of fruit and nut orchards in different stages of production, and with varying levels of success. Typical orchards would be of 1 jerib and would be grown to citrus, almond or apricot (Table 7). Being on the vicinity of the main road connecting Jalalabad and Peshawar, Ghanikhil is in a privileged location to supply both markets, should production and marketing systems are put in place.

**Table7. Types and Composition of Existing Orchards, Ganikhil. Dec, 2005.**

Crop	Trees/farm	Main problem	Current Income generation	Ranking Future interest
Citrus	48	1	PKR20,000 (US\$333)	Almond
Apricot	56	1,2	PKR23,300 (US\$388)	Apricot
Almond	56	2	PKR20,000 (US\$333)	

1 Productivity; 2 Market; 3 Pests/diseases; 4 Irrigation, 5 Quality; as reported by farmers

There are a few 3-4 year old almond orchards established with support from Relief International that are currently in production, with varying degrees of success. Even at low technology levels, farmers are pleased—and proud—of the results. Yield per jerib is 280Kg of marketable quality. Last year’s crop was sold in the Jalalabad market at PKR 1200/man (approximately US\$2.85/Kg). Farmers’ main complaint is that they were given the trees with no technical assistance; therefore they have been unable to provide adequate management and realize the production potential of the orchards.

There are also apricot orchards of ½ jerib each established some 4-5 years ago with support from the United Nations Office on Drugs and Crime (UNDCP). Farmers are in average obtaining 70Kg of fruit per tree without any type of management. One of the farmers interviewed harvested and sold 1.5MT of apricot at 130PKR/man (approximately US\$0.30/Kg). IF-Hope, with support from ALP/E, is currently working in the establishment of 250 orchards of 4 jeribs each, which is properly managed will enable farmers to engage in fruit production in a profitable fashion.

An aspect that should be taken into consideration in future investments in the area is that during the last five years farmers in Ghanikhil have been “bombarded” with fruit and nut

trees by international development organizations, as a conspicuous attempt to reduce poppy cultivation. This has created some resistance from wealthier farmers (e.g. those heavily engaged in opium production) hence the need to devise an appropriate strategy for the development of the fruit and nut industry in the region. Such a strategy should have a strong emphasis on demand-side interventions, promotion of high-value crops and creating investment opportunities in agro-processing to attract local capitals. In summary, Ghanikhil should constitute a priority area of intervention for the development of perennial horticulture, given the high production and marketing potential of the area, in addition to the dimension of the impending impact in terms of poppy production.

### **3. Summary of Production Issues**

From the discussion presented above, which summarizes findings in what are considered to be the highest fruit and nut producing areas in Eastern Afghanistan, we can conclude in the following lines:

- a. One of the most important assets of the region is its germplasm; local fruit and nut varieties are rich in market-sought attributes and therefore have the potential to compete with world-class producing countries.
- b. As it would be expected, many years of war have had a negative effect on fruit and nut production, which has been evident in the destruction of commercial orchards that have succumbed to lack of irrigation and overall management.
- c. Currently, “backyard” orchards constitute the major source of fruit and nut in the region, and the main source of germplasm for the reconstruction of the regional fruit and nut industries.
- d. Contrary to the case of vegetables, which are specifically produced for market purposes, a large percentage of fruits and nuts marketed in the region correspond to household surpluses, which aggregated result in significant volumes. Notwithstanding the dimension of such volumes; there is no consistency in regional production regarding choice of varieties and quality standardization. Similarly, there is no available data regarding production volumes that could be used by traders and potential investors to estimate supply.
- e. The current priorities of rural households—consistent with those in post-war situations—are focused on the production of food and cash crops whose benefits can be realized in a relatively short period of time, a criterion that *de facto* eliminates fruit trees from farmers’ priority lists. This said, there are groups of farmers, especially in Kunar and Langhman districts that are interested in establishing new fruit orchards if they are provided with technical assistance and market opportunities for vegetables to be grown as intercrop.
- f. Rural markets for fruit and nuts are plagued by several factors that converge reducing farmers’ incentives to invest in production. Among these factors it is worth mentioning the following:

- i. ***Absence of minimum efficiency scales in production.*** This is evident in backyard orchards, as well as in groves recently established with NGO support, in which the focus seems to have been on diversity for household nutrition instead of for commercial production. So far, this has had a direct effect on farmers' bargaining power.
- ii. ***Low productivity.*** As mentioned before, most orchards (old and new) are in poor state; they have not been trained, pruned or fertilized for several years, which has had a direct impact on yields, reaching in average reach only 20 percent of their yield potential, thus making fruit and nut production unattractive to farmers.
- iii. Derived from ***overly diversified production, lack of economies of scale, low productivity and absence of horizontal coordination among farmers,*** traders benefit from monopsony paying unrealistically low prices.

*All these factors result in a vicious circle in which low productivity and market inefficiencies reduce the financial capacity and reduce the incentives for farmers to make the necessary investments to overcome these constraints.*

#### 4. Marketing Constraints

##### 4.1. Post Harvest Handling

A rapid assessment of produce handling practices at farm level, as well as in the Jalalabad wholesale market showed evidence of significant losses due to inadequate grading and packaging. Table 8 shows the extent of such losses based on observation and discussions with wholesale distributors. The products listed below are limited to the ones available at the wholesale market in December 2005 and January 2006; a similar analysis needs to be conducted during the summer season.

**Table 8. Estimation of Post-harvest Losses for Main Fruit Crops in Eastern Afghanistan, Dec. 2005.**

Product	Type of Packaging	Type of damage	Average percentage loss
Orange	Wooden crates	Bruising	4
Apple	Wooden crates	Bruising (dust**)	11
	Polypropylene bags	Bruising (dust***)	17
Pear	Wooden crates	Bruising	10
Pomegranate	Wooden crates	Bruising / scraping	6
	Polypropylene bags	Bruising / crushing	9
Grapes	Recycled cartons	Discoloring, general decay and dust**	18

\*Severity of dust damage (\* relatively low----\*\*\*substantial)

Source: Farmer and wholesaler interviews, December, 2005.

There is widespread use of wooden crates insulated with newspaper that although not ideal, offer a reasonable degree of protection for citrus and pomegranate, favoring ventilation, hence slow ripening. Apples and pears packed in wooden crates suffer more damage, which is more evident for the fruit in the critical areas of the box (Figure 1).

**Figure 1. Citrus in wooden crates**



Apples produced in Eastern Afghanistan and Kapisa Province are generally brought to the market in polypropylene bags (Figure 2), which exposes them to extreme damage, both in terms of bruising and scraping and also to dust, resulting in average losses of 17 percent, most of which are observable only when they reach the retail stage.

In contrast, pears imported from China (Figure 3) although packaged in low-grade cardboard boxes (e.g. Test 175), have an individual protective foam sleeve, which results in average losses below 2 percent, despite the handling they are exposed to. This is a practice that can be replicated for local produce following the achievement of critical volumes.

**Figure 2. Apples in Polypropylene bags**



**Figure 3. Chinese Pears with foam sleeves**



Grapes are typically transported in recycled oil and shortening boxes (Figure 4) which exposes the fruit in the lower layers of the box to significant damage in terms of crushing and scraping. Similarly, they are subject to rapid ripening and decay resulting from accumulation of methane (boxes are closed, partially impermeable due to oil spillages and

exposed to the sun during transport).

**Figure 4. Grapes packaged in oil/shortening boxes**



In contrast to the case of fresh fruit, dry fruit is generally transported in cardboard boxes, baskets and only seldom in wooden crates. However, damage is not significant due to their low water content.

Despite the degree of losses derived from inadequate handling, most fruit wholesalers in Jalalabad see these losses as normal and a risk that retailers take into consideration in their markups. However, is this issue was adequately addressed from the farm-gate; it would result in substantial efficiency gains

throughout the value chain.

In summary, post harvest losses account for eleven percent of the crops observed during field research. This has a significant effect on profitability and needs to be properly addressed by increasing awareness among producers and traders, as well as by enhancing their technical capacity to improve post-harvest handling practices and harness greater economic benefit.

#### **4.2. Grades and Standards**

As it would be expected in a post-war and resource-poor economy; discussions with fresh produce wholesalers and retailers in Jalalabad markets and informal stall owners revealed that consumers are not particularly sensitive to quality, but to price. By the same token, wholesalers did not see the need to grade the produce, under the assumption that it is more convenient for them to sell ungraded fruit at an average rather than sell the large or better quality fruit at a higher price.

In contrast, wholesalers shipping produce to Peshawar market are convinced that improved grading and packaging has the potential to enable them to sell at higher prices, while reducing losses during transport. Therefore, it would be in their interest to enter into arrangements with producers to buy graded and readily packaged fruit.

In general, there are no pre-agreed grades and standards neither for fresh and dry fruit, nor for nuts. Price negotiations are based on the appearance of individual lots, requiring individual inspection and thereby increasing transaction costs, while at the same time giving rise to opportunistic behavior on the part of traders.

Besides the issues related to physical appearance of the fruit, food safety is a major concern, which has serious implications for local and international trade. In the case of fresh fruit it is assumed that it will be washed or peeled before consumption. However, microbial

contamination becomes a crucial issue in the case of dry fruit, which is generally consumed without further cleaning (Figure 4).

**Figure 4. Dried apricot and sources of microbial contamination**



#### **4.3. Marketing Systems**

As outlined before, farmers generally sell their surplus production “by the tree” or by unit area. This practice not only shows farmers’ lack of awareness regarding the value of the crop, but limits their possibilities to add value by harvesting and selling fruit by weight or by other conventional measures. This is further worsened by the absence of market information, privileging asymmetric knowledge in trade relationships, and providing an enabling environment for price setting to the detriment of farmers.

As explained in the generic value chain structure presented in Figure 1 (Page 9) community-level traders harvest, assemble, pack and transport the produce, which is sold to a few retailers located on the main roads, while the bulk is sold to wholesalers in the Jalalabad market.

Wholesalers operate in an intricate social network, often with family members operating similar businesses in Kabul and Peshawar wholesale markets. Close communication among trading partners enables them to source a broad range of produce and keep a permanent flow of fruit and vegetables between markets.

Marketing margins vary among crops and between seasons. However, as shown in the examples of Figures 5-8, field data collected in January, 2006 shows that farmers’ revenue consist of 25-50 percent of final market price, which to be appropriately interpreted would have to be looked at in the light of production costs, currently unavailable. However, these figures show unusually high marketing margins for wholesalers and retailers, consistent with our analysis regarding high transaction costs and lack of competition, especially at rural level.

Figure 5. Gross Marketing Margins for Orange in Eastern Afghanistan, 2006

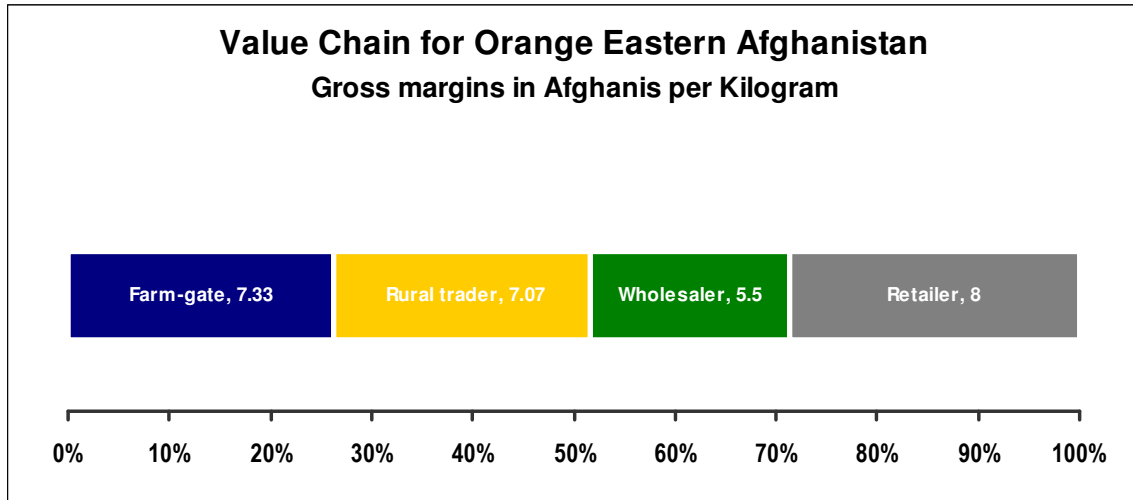
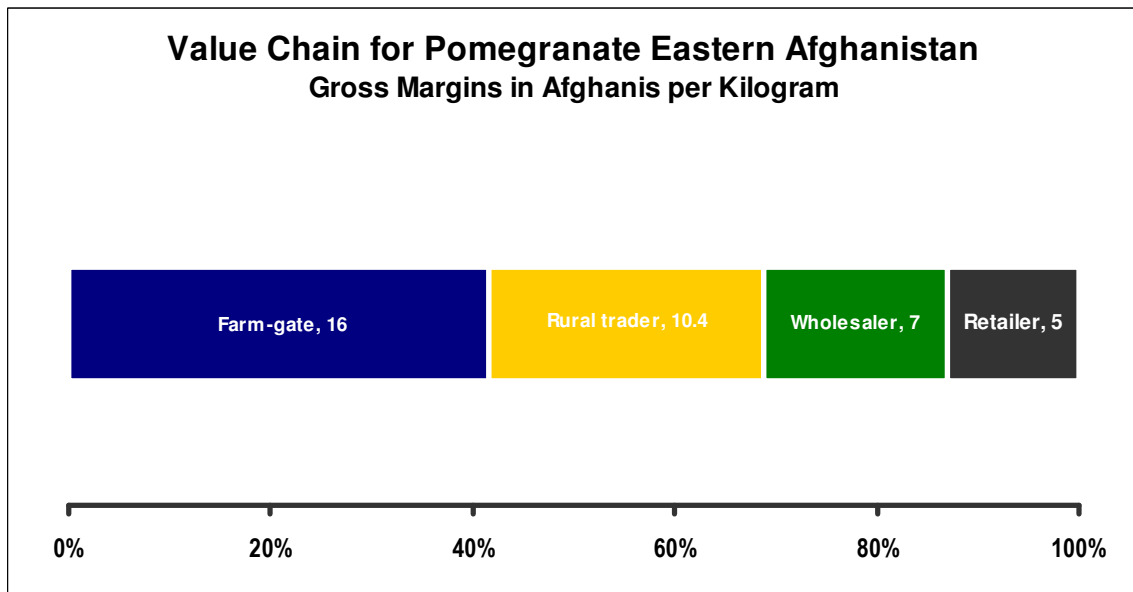
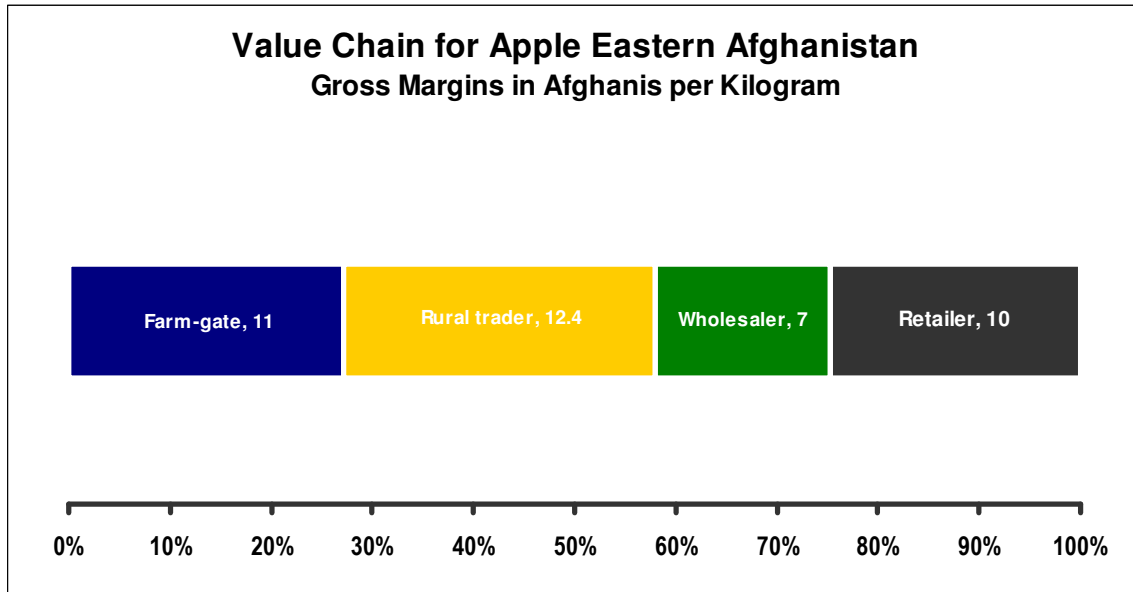


Figure 6. Gross Marketing Margins for Pomegranate in Eastern Afghanistan, 2006



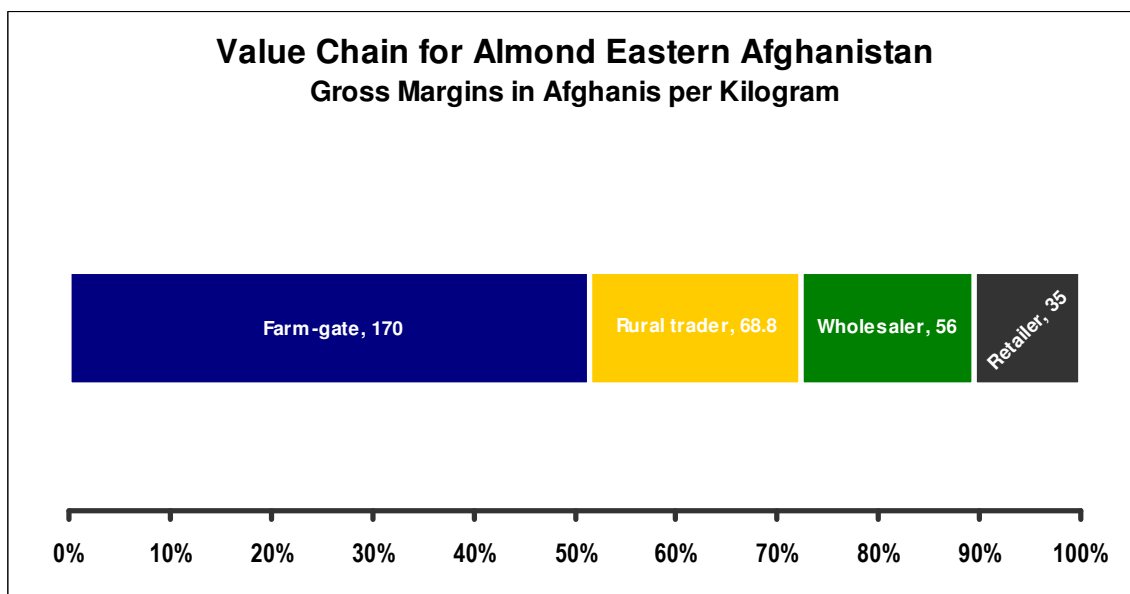


**Figure 7. Gross Marketing Margins for Apple in Eastern Afghanistan, 2006**



The case of Almond (Figure 8) presents a unique case in which farmers typically keep a larger portion of the final price. This derives from the fact that almond producers are mainly semi-commercial, and due to the relatively low volume/weight ratio they deliver their produce to the market, reducing the dependence on rural assemblers, and taking advantage of greater competition among prospective buyers.

**Figure 8. Gross Marketing Margins for Almond in Eastern Afghanistan, 2006**



As shown in Table 9, according to wholesalers in Jalalabad, a large percentage of fruit and nut production remains in the region, and although they have identified demand for higher volumes in Peshawar and Kabul markets, they are currently unable to supply.

**Table 9. Estimated Regional Fruit Production, Perceived Demand and Final Markets, 2005.**

Produce	Production <sup>1</sup> 2005 MT	Final Destination of Regional Production (Percentage)		
		Kabul	Jalalabad	Peshawar
Almond	30	0	80	20
Apple	900	10	70	20
Apricot	500	20	80	Moderate demand
Grape	200	0	90	10
Loquat	150	40	60	High demand
Orange	3000	50	30	20
Pear	200	0	100	Highly competitive market
Plum	350	30	70	High demand
Pomegranate	200	0	100	High demand
Quince	50	20	10	70
Tangerine	120	30	70	Highly competitive market
Others <sup>2</sup>	80	20	60	20

Source: Wholesale survey, 2005-2006

Wholesalers often give cash advances to community –level traders, a practice that has a high financial cost, ultimately born by farmers and consumers. Another and perhaps the most significant source of transaction costs is the stream of informal payments that traders need to make during transport of goods. Traders invariably cite the case of shipments to Peshawar which cost them an additional PKR25,000 (US\$415) per truck-load in bribes paid at the several road blocks.

As in the case of the production phase, marketing systems in the region are affected by a number of inefficiencies that punish producers through low prices and final consumers in the opposite way. *While there is a significant level of competition at wholesale and retail levels, the critical link is that between farmers and wholesalers.*

Similarly, post harvest losses and the inability of traders to add (time) value through storage, further contribute to the stagnation of the whole production and marketing system.

Infrastructure also plays an important role in market development, especially regarding: a) absence of assembly centers at community level, b) poor state of farm-to-market roads, and c) lack of adequate cold storage facilities.

<sup>1</sup> In the absence of reliable statistics, the figure reported corresponds to average wholesalers' best guess of fruit production from Nangarhar, Laghman and Kunar provinces that passes through the Jalalabad Wholesale Market.

<sup>2</sup> This includes grape, banana, guava and others produced in small volumes

In summary, the current constraints to market development can be summarized in the following points:

- a) Lack of economies of scale in production derived from: i) the small size of typical orchards, and ii) overly diversified groves prevent farmers from reaping greater benefits from agricultural trade
- b) Derived from (a) above, farmers are highly vulnerable to—and often target of—opportunistic trade practices on the part of community-level traders.
- c) Lack of market information that could bring about market incentives for farmers to adopt technological and organizational innovations in the form of improved crop management technologies and collective marketing systems.
- d) Poor post-harvest and packaging practices result in substantial losses to the detriment of producers and consumers
- e) Institutional deficiencies, such as informal payments during transport of goods, result in high transaction costs, thereby further reducing the profitability of fruit and nut production and marketing.
- f) Inadequate or nonexistent road and storage infrastructure increases transport costs and prevents traders from adding value to crops. Traders often cite the case of apples and oranges, which are exported to Peshawar, stored for 2 months and then re-exported to Afghanistan.

## 5. Conclusions

Over the last 25 years, the perennial horticulture subsector has been exposed to a variety of shocks that have affected its structure and performance. This has been evident in the destruction of commercial orchards, the disruption of marketing systems and most importantly affecting farmers' ability to react to market stimuli. It is the lack of market incentives—exemplified through the vicious circle that begins and ends in low profitability—that is currently preventing rural households to invest in fruit production. Additionally, most rural households are currently focusing their efforts on rebuilding their livelihood by investing resources in the production of short-cycle crops, which naturally diverts their attention from long-term ventures.

Contrary to conventional wisdom about fruit and nut production in Eastern Afghanistan, most farmers lack the technical capacity to engage in commercial fruit and nut production. Technical knowledge was also lost during the war.

Production and market inefficiencies are ubiquitous; production levels are extremely low, only reaching 20-25 percent of the crops' yield potential, which has a direct effect on profitability. As an example of this, extrapolating the per-tree production of oranges to per-hectare terms<sup>3</sup>, would result in average yields of 4MT/Ha compared with a world average of 17.4MT/Ha.

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<sup>3</sup> Using production data from the field survey carried out in December 2005 and January 2006.

From a marketing standpoint, the supply chain for fruit and nuts is a truncated system, with farmers, community-level traders, wholesalers and retailers at the center, but with neither forward linkages to agro-processing or value adding of any sort, nor backward linkages with nurseries, input suppliers or providers of technical assistance.

This “shortened” supply chain further limits the prospects for the development of the subsector as there are no push or pull factors, in the form of crop production technologies and profitable market opportunities that could otherwise increase the flow of produce.

Reviving the perennial horticulture subsector in Eastern Afghanistan will therefore require of comprehensive strategy aimed to build the capacity of tree nursery operators, farm families and the extension system to focus their efforts in increasing productivity and farm-gate quality.

### **Market opportunities.**

Developing fruit and nut markets for farmers in Eastern Afghanistan will undoubtedly require careful consideration of market demand in the local, regional and international markets, with a detailed analysis of production possibilities in the region. The latter should include an in-depth assessment of agro-ecological conditions, farmers’ interests and availability of market infrastructure and value adding facilities.

However, considering the need to identify and prioritize key subsectors within perennial horticulture in order to inform “macro” strategic decisions in the short term, it is necessary to draw from key informants’ knowledge regarding the identification of crops with market demand within the region, as well as farmers’ preferences.

Table 10 presents a summary of the rankings derived from discussions with farmers in Kunar, Langhman and Nangarhar districts, as well as wholesalers in the Jalalabad Market. It is appropriate to clarify at this point that the table was based on traders’ perceptions based on the number of requests they receive from their buyers; however the ranking does not necessarily reflect the size of the market for each product. This will have to be determined through the activities proposed in the subsector development strategy. However, it is expected that future analyses will not significantly differ from these findings, based on the fact that all figures are based on the perceptions of key actors in the supply chains for fruit and nut.

**Table 10. Prioritization Matrix Based on Key Informants Perceptions**

<i>Crop</i>	<i>Farmers' Preferences</i>	<i>Market Prospects</i>	<i>Total Score</i>	<i>Ranking</i>
Apricot	11	12	23	<b>1</b>
Orange	13	9	22	<b>2</b>
Persimmon	12	8	20	<b>3</b>
Peach	7	10	17	<b>4</b>
Apple	10	6	16	<b>5</b>
Plum	3	13	16	<b>6</b>
Grapes	4	11	15	<b>7</b>
Pear	6	7	13	<b>8</b>
Guava	9	3	12	<b>9</b>
Quince	8	4	12	<b>10</b>
Pomegranate	5	5	10	<b>11</b>
Banana	2	2	4	<b>12</b>
Loquat	1	1	2	<b>13</b>

Source: Field Interviews, 2006.

 Priority crops

Based on this analysis it is now possible to identify and prioritize, with a reasonable level of reliability, the crops with greater potential, based on their market prospects as well as farmers' preferences. These results will be integrated into the development of the implementation strategy later in the document.

The second question posed at the beginning of this study referred to the identification of the main factors—at production and marketing levels—constraining the growth of the subsector; which is consistent with a synthesis of issues to be addressed in the project's implementation Strategy. The issues, which have been discussed before and that need to be addressed by the implementation strategy include:

***Production Constraints***

- Current focus on short-cycle crops derived from households' immediate needs
- Absence of minimum efficiency scales in fruit and nut production
- Poor management of existing orchards, with direct implications on productivity and farm-gate quality
- Absence of horizontal coordination that could partially offset the implications of lack of economies of scale in crop production

### ***Marketing Constraints***

- Lack of economies of scale in fruit and nut marketing bring about prohibitively high transaction costs to farmers
- Absence of market information preventing farmers from identifying profitable market opportunities
- Poor post harvest handling practices further reduce profitability
- Absence of market infrastructure, specifically cold storage facilities substantially reduce the subsector's growth prospects.
- Lack of backward and forward linkages substantially reduce the subsector's growth opportunities by limiting its prospects for increasing productivity and market efficiency

## II. Implementation Strategy and Action Plan

### Introduction

Designing an implementation strategy in support of the development of perennial horticulture in Eastern Afghanistan will require a comprehensive effort that integrates a well balanced mix of production and market interventions. Balancing these two areas is crucial especially considering that the subsector is currently stagnant and there is need to match production to market demand, while addressing the strategic issues previously identified in order to reactivate the supply chains.

Despite the current state of the perennial horticulture subsector, Eastern Afghanistan has the potential to develop a strong fruit and nut industry taking advantage of key success factors like the availability of crop varieties with outstanding market prospects and adapted to local environmental conditions; business-minded farmers with experience in intensive agriculture, relative proximity to markets and a tight social fabric that favors collective action.

The proposed strategy and action plan aims to achieve the strategic objectives detailed in Table 11 through a set of coordinated interventions.

**Table 11. Strategic objectives.**

<b>Production</b>	Promoting investment in longer-term economic opportunities
	Facilitating the achievement of critical production volumes
	Increase productivity and enhance quality
<b>Marketing</b>	Facilitate horizontal coordination
	Reduce post-harvest losses
	Promote investment in agro-processing
	Facilitate intra-sectoral and inter-sectoral linkages

## Implementation Strategy and Specific Activities

### *Overarching Vision*

***Enabling rural households in Eastern Afghanistan to become the suppliers of choice of local and regional fruit and nut traders and eventually processors, derived from the consistent delivery of high-quality produce, while increasing their incomes based on cost-effective production and collective marketing***

This statement brings together a set of intermediate objectives to be achieved by project beneficiaries, especially in terms of *achieving consistency in production, improving produce quality; attaining cost-effective (profitable) production and capitalizing on collective marketing.*

Identifying specific interventions to enable project beneficiaries to achieve these intermediate objectives requires the recognition of crucial strategic issues currently limiting the prospects for the development of a strong and coordinated fruit and nut industry. It is also necessary to take into consideration that besides the individual effect of each strategic issue at a particular stage of the supply chain, there is a compounded effect due to the interaction of several of these factors, thereby compromising systemic chain efficiency.

Furthermore, the current scenario presents two challenges; on the one hand a lack of reliable information regarding regional production, production possibilities of the participating communities (i.e. in terms of agro-ecological conditions) and trade data; and on the other hand the imperative to jumpstart the rural economies through high-impact and low-risk market-oriented activities. This will require a two-pronged strategy aimed to capitalize on existing resources to increase productivity, farm-gate quality and facilitate efficient market linkages in the short term, while building the foundation for the development of a strong fruit and nut industry as part of a medium term strategy.

A crucial element in both, the short term and medium term strategies should be the integration of participating rural households in parallel income generating activities, recognizing two main challenges; the crucial need for economic impact, and the time required for fruit and nut orchards to reach production stage. This underscores the need to concentrate project activities around specific development initiatives. Examples of this would be the involvement of orchard owners in cash-for-work activities as an incentive to accelerate the establishment of marketing groups and to repair irrigation structures, while enhancing women participation through women-only production and marketing groups and nurseries.

### **1. Short Term Strategy**

Bringing the existing orchards back into production to acceptable levels of productivity by itself constitutes a challenge, especially considering the degree of spatial dispersion, as well as the (small) size of existing enterprises. The second major challenge is reducing the number and dimension of market inefficiencies, while introducing market incentives strong



enough to encourage the rehabilitation of orchards and the formation of collective marketing groups.

It is important at this stage to recognize that under the best assumptions, income increases derived from production and marketing of small quantities (coming from backyard orchards) will have a limited impact on the livelihoods participating households. Therefore selection of participants should be geared towards producers with at least ½ jerib of ***apricot, orange, persimmon, peach, apple or almond*** trees at productive stage (Table 10), while allowing for the participation of smaller producers on voluntary basis.

Government-owned orchards constitute a special case within the context of this strategy; their rehabilitation and integration to agro-processing have the potential to substantially support economic development in the region. However, for this venture to be successful there is need to facilitate the establishment of joint ventures or leasing agreements between government and private sector investors. Therefore, this opportunity will be further explored by the ALP/E Private Sector Development Section. The Agriculture and Agribusiness Division will provide support in the production and marketing areas once the institutional arrangements (private-public sectors) are in place.

***Based on the recognition of these challenges, the short term strategy will rest on three main pillars:***

- 1. Improvement of agricultural productivity and farm-gate quality***
- 2. Formation of collective marketing groups***
- 3. Facilitation of market linkages***

### **1.1 Improving productivity and quality**

Enabling small farmers to increase yields and improve produce quality requires recognizing the factors that intervene in the technology adoption process; on one side there is need to build the capacity of farmers on how to use the technologies, while on the other there is need for an incentive to for them to apply them. Within this framework, project activities in support of productivity and produce quality will include:

- a) ***Selecting beneficiaries*** in conjunction with district shuras and extension staff from the Ministry of Agriculture in 10 priority districts. The selection process will follow a deductive approach based on the following criteria:
  - Communities with at least 20 jeribs of tree fruits of priority crops listed in Table 10
  - Households that have a minimum of ½ jerib of fruit orchards at productive stage and a total landholding greater than 5 jeribs. The

latter is aimed to target households with higher investment capacity in the initial phase, while reducing potential conflicts between food and cash crops.

- b) ***Baseline survey.*** The project will subcontract the implementation of a baseline survey to record indicators of technology level, yields, production costs, levels of dispersion of production, access to infrastructure, current market outlets and prices, among others as a tool to prioritize areas of intervention and measure project impact. The survey will take place in the spring of 2006.
- c) ***Provision of practical training in fruit tree management.*** The project will contract the services of an implementation partner to design “practical” training modules in fruit tree production (e.g. fertilization and irrigation; pruning and training, and pest and disease control.) to be used by the Department of Extension and Nangarhar University in training o trainers (activity 6.2.3.b) and as a reference manual by Community-Level Agricultural Representatives (Cross-cutting activity (c)). Considering that current productivity levels are in the range of 15-25 percent of the yield potential of existing varieties, it is expected that interventions in support of productivity will achieve a minimum of 40 percent increase in the first two years of implementation.
- d) ***Practical training in post-harvest handling and packaging.*** The project will develop a printed training module and a DVD on post harvest handling and packaging, which will be also disseminated to farmer groups through the extension system, following its strengthening (Cross-cutting activity (c)).The number and frequency of training courses will be agreed-upon between ALP/E and implementing partners based on results from the baseline survey. Improvements in post harvest handling are expected to reduce average losses to 5 percent as compared to the current average of 11 percent of total marketable output.

Despite the current deficiencies of the extension system, it is also crucial to recognize the need to create local capacity to ensure the sustainability of the development process, without relying solely on non-governmental implementing partners. Therefore, the project will develop a complementary strategy for the strengthening of the agricultural extension system, further detailed in section 6.3.3.

## **1.2 Enhancing returns through collective action**

The small size and the high degree of dispersion of fruit orchards throughout the region have had a direct effect on transaction costs, which have resulted in lower farm-gate prices and farmers’ inability to adopt fruit production as a commercial activity. Collective action, in the form of community-level marketing groups offers the possibility to reach critical produce volumes and attracting potential buyers, while significantly improving farmers’ bargaining power. Target farmer groups should not be limited to registered organizations, recognizing

the existence of socially-bound and functional farmer conglomerates operating in the rural communities, and considering that the basic function of farmer groups will be that of facilitating bulk sales, but will not necessarily involve collective financial management.

Community-level marketing groups will constitute a resource for both the short-term and medium-term strategies, as they are expected to evolve into more formal organizations.

- a) ***Establishment of Collection Centers.*** The project, through implementing partners will provide equipment for the establishment of 60 community-level collection centers, provided each community commits the land and build a basic packing shed. Rather than an expensive physical facility, collection centers will constitute a “place” where farmers can bring their produce to be collected by buyers, following a previous agreement. The project, though an implementing partner will provide a 100Kg scale, materials for two grading tables and partial financing of packaging materials (e.g. wooden crates). These collection centers are expected to provide access to markets to over 3000 farm families.
- b) ***Training and technical assistance in institutional development.*** The project will contract the services of partner NGOs to build the capacity of community-level marketing groups in the areas of institutional development (including conflict resolution) and basic marketing skills.
- c) ***Identification of production and marketing clusters.*** The project will build a GIS database of collection centers that coupled with information from the baseline survey (including data of geographic location and productive capacity of farmers’ fields) will make possible the identification of 10 production clusters and estimate output volumes. Within the context of this strategy, production and marketing clusters are conceived as groups of 5-6 collection centers geographically linked and whose production can be coordinated to benefit from economies of scale. This will constitute a tool in the facilitation of market linkages with traders, exporters and valuable input in the development of feasibility studies for agro-processing.

### **1.3 Facilitating market linkages**

Farmers in the region invariably complain about their inability to find reliable markets; they are increasingly exposed to community-level traders and occasional buyers neither of whom is interested in the establishment of long-term commercial relationships.

As much as traders in Jalalabad, Kabul and Peshawar are interested in securing sustainable supply, under current circumstances transaction costs exceed potential benefits. It is therefore crucial to understand the complementarities among the different activities part of the proposed strategy. Within this context, added value through sorting and improved packaging are expected to result in higher farm-gate prices and lower post-harvest losses, which added to a substantial reduction of transaction costs (derived from collective

marketing) and shortening of the supply chain by promoting direct negotiations between farmers and wholesalers will ensure that farmers obtain better prices, while wholesalers, exporters and processors have access to a reliable source of high-quality produce.

- a) ***Facilitation of institutional arrangements between production and marketing groups and wholesalers, exporters and processors.*** The project will facilitate the interaction and the negotiations between marketing committees and potential buyers, including wholesalers, exporters and emerging processing firms. The ultimate objective of this activity will be oriented towards the facilitation of forward contracts, in order to reduce the level of uncertainty of producers and traders. Quality standards and minimum delivery volumes will constitute an integral part of the contracts, in order to attract the interest of buyers, while allowing producing communities to add value to their process through grading and packaging. This activity is expected to result in 20 percent increase in farm-gate price, derived from the facilitation of direct linkages between farmer groups and wholesalers.

## **2. Medium Term Strategy**

The medium term strategy is aimed to develop the productive potential of the region, through the establishment of new orchards privileging the concepts of economies of scale, productive capacity of each micro-region and collective marketing. This is what in essence will rebuild the region's fruit and nut industry, with long-term implications in terms of economic development.

***Based on these premises, the medium-term strategy for the development of perennial horticulture will consist of four major elements:***

- 1. Identification of markets, crops and communities***
- 2. Establishment of new orchards***
- 3. Building local capacity to meet market requirements***
- 4. Inclusion of beneficiaries in complementary activities***

### **2.1 Identifying Markets, Crops and Communities**

- a) ***Identifying markets.*** The goal of this activity will be the identification of crops with market potential; the estimation of effective demand, as well as market requirements in terms of varieties, seasonality and quality standards. For this activity, the project will commission a market study looking at domestic and regional markets for fruit and nuts. The study will identify 10

crops with market demand, will also generate accurate data regarding effective demand, seasonal patterns, and price trends, while also identifying key players in destination markets.

- b) ***Identification of areas with productive potential for promising crops.*** Following the identification of crops demanded by regional and international markets, the project will use geographic information systems to identify communities that meet the agro-ecological conditions for optimal production of promising crops (i.e. those prioritized through the market assessments). At this stage the criterion of optimality becomes relevant in reducing farmers' production risks. Other criteria to be used in the selection of participating communities will include proximity to markets, and the possibilities to reach minimum efficiency scales in production derived from higher concentration of both irrigated land and farmer groups interested in participating in production and marketing activities. The selection process will also privilege those areas with higher concentration of poppy production, in order to enhance impact in the eradication of illicit crops.
- c) ***Identification of target Crops.*** Once the crops with market potential as well as suitable areas for production have been identified, the project will conduct financial analysis in order to prioritize 6 crops with greater returns per unit area. Similarly, the project will look at the availability of local germplasm that meet market-sought traits.

## **2.2 Establishment of commercial orchards**

6,000 hectares of commercial orchards of crops identified through activities 2.2 (a), (b) and (c) will be established in communities that meet the following criteria: i) communities prioritized based on agro-ecological conditions (activity 2.1.b); ii) land availability: communities with a minimum of 20 hectares available in plots not smaller than 0.5ha; iii) written commitment to refrain from producing opium, and iv) willingness to establish a collection center (from farmers' own funds) and form an association. The total of 6,000 hectares include 3,000 already sub-contracted to IF-Hope.

Specific activities will include:

- a) ***Procurement of quality germplasm.*** The project will, in collaboration with implementing partners, facilitate the procurement of rootstock and grafting material in order to ensure compliance with market demand and homogeneity in the plant population.
- b) ***Production of 0.9M saplings*** will be subcontracted to small and medium-size orchards, supervised by implementing partners, in order to foster the development of local capacity in plant production, while contributing to the reactivation of the rural economies. Promoting women-owned nurseries will constitute an integral element of this activity.

- c) ***Distribution of planting material.*** The project will sub-contract the distribution of planting material, together with a brochure detailing the management requirements of the crop. Provision of long-term technical assistance is discussed in activity 6.4.3.

### **2.3 Building the Capacity of Rural Communities to meet market requirements.**

Recognizing that increases in productivity and post harvest handling will have little impact in farm profitability unless farmers are able to meet market requirements in terms of seasonality, variety selection, grading and packaging—among others. The project focus its efforts in building the capacity of farmer groups in production and post-harvest handling technologies to meet specific market requirements. Information for preparation of training materials will be gathered from different sources, but especially from crop-specific market studies (activity 2.1.a).

- a) ***Production manuals and training materials.*** The project will contract the services of a short term consultant to develop crop production and post-harvest handling manuals and training materials for priority crops, both of which will feed from market studies (2.1.a). These materials will be used in training of trainers, and as reference materials for the Agricultural Representatives (Cross-cutting activity (c)).
- b) ***Training extension agents and Community Agricultural Representatives.*** Training of trainers will constitute a long-term activity to be conducted as part of a partnership between the Department of Extension and Nangarhar University and funded through ALP/E. This will constitute a key element of activities in support of the extension system (Cross-cutting activity (c)).
- c) ***Establishment of farmer associations.*** The project will subcontract implementing partners to promote the establishment of farmer associations with the central objective of facilitating *market access* via: i) access to modern crop production technologies, ii) collective marketing, iii) value adding through grading and packaging, and iv) promoting policy change.

### **2.4 Inclusion of beneficiaries in collateral activities**

Recognizing that it will take 2-3 years for fruit and nut orchards to reach productive stage, and during this time farm families will need to have access to complementary sources of income. The project will promote the involvement of farmers (beneficiaries of the orchard development program) in parallel income-generating activities, including:

- a) ***Cash for work.*** The cash for work program within ALP/E constitutes a formidable way to provide rural households with access to income, while contributing to improve the infrastructure in their communities. Efforts will

be made to privilege project beneficiaries in cash for work activities, including construction and/or rehabilitation of farm-to-market roads, rehabilitation of irrigation infrastructure, and community-based natural resource management activities. Examples of the latter are; establishment of forestry plantations or management of natural forests, as well as in water management and soil fertility activities; most of which will incorporate a financial incentive.

- b) ***Vegetable production.*** Considering that most areas of the Eastern region have the potential to produce at least 3 vegetable harvests per year, the project will involve beneficiaries of the orchard program in the production of high-value vegetables, as part of its strategy for annual crops. The latter involves the facilitation of market linkages, with significant prospects for value adding. Participating farmers will decide whether to plant vegetables in combination with perennials or in different enterprises, based on land availability and their personal preference.

### 3. Cross-Cutting Activities.

The project's implementation strategy for perennial horticulture will benefit from parallel initiatives, including:

- a) ***Agro-processing.*** The Agriculture-Agribusiness and Private Sector Development Sections of ALP/E will draw a common action plan for the promotion of agro-industrial processing, by facilitating linkages between prospective investors and producer groups, and supporting specific investment intentions via commissioning and co-funding feasibility studies. This action plan will greatly rely on production estimates, financial analyses and GIS database generated through activities in the short and medium-terms strategies outlined above, while contributing to create a pull-factor in support of the growth of the subsector.
- b) ***Market Information.*** Recognizing the need for the introduction of an element of transparency in agricultural trade, and in order to encourage competition in the agricultural markets in the region, ALP/E will design a market information system (MIS) to be implemented by a local organization. The system will integrate the collection, analysis and dissemination of market information, together with extension messages and concrete trade opportunities via—commercial—AM radio, and if economically and technically feasible, via short message service (SMS). The project will cover the establishment costs of the MIS, as well as the operational cost of the first year. However, it is envisaged that by the end of the project the system will be self-

sustainable. This activity will be carried out in close coordination with the Private Sector Development Section.

- c) ***Extension.*** The agricultural extension system in Eastern Afghanistan, and particularly in Nangarhar Province is severely understaffed; extension agents are underpaid and are not properly equipped with up-to-date knowledge or training materials to build the capacity of small farmers. The project is currently in the process of designing a major intervention in support of the extension system, capitalizing on *Community Agricultural Representatives* (natural leaders, exceptional farmers and progressive citizens selected by their own communities), who will be trained and hired on part-time basis in support of extension agents. Community Agricultural Representatives will constitute the interface between extension agents and farmers and will work heavily in market-led crop production.
  
- d) ***Geographic Information System.*** ALP/E is currently establishing a comprehensive geographic information system, which will facilitate the activities of most project components. In the particular case of perennial horticulture the system will contribute to the analysis of crop suitability, location of collection centers, identification of production and marketing clusters, and crop estimates, among others.



#### 4. Budgets

Table 11. Budget Estimate for the Implementation of the Short-Term Strategy for Perennial Horticulture (FY2006-2007)

<i>Activity</i>	<i>Description</i>	<i>Implementer</i>	<i>Estimated cost (US\$)</i>	<i>Fiscal year</i>
<b>6.1.1</b>	<b><i>Improving Productivity and Quality</i></b>			
6.1.1.a	Selection of beneficiaries	ALP/E and local IP	12,000	2006
6.1.1.b	Baseline survey	ALP/E	70,000	2006
6.1.1.c	Technical training in fruit tree mgt.	IP	450,000	2006
	<b><u>Sub-total</u></b>		<b><u>532,000</u></b>	
<b>6.1.2.</b>	<b><i>Enhancing Returns Through Collective Action</i></b>	IP		
6.1.2.a	Establishment of collection centers	IP	225,000	2006
6.1.2.b	Training and T/A in institutional dev.	IP	125,000	2006
6.1.2.c	Identification of production and marketing clusters	ALP/E	15,000	2006
	<b><u>Sub-total</u></b>		<b><u>365,000</u></b>	
<b>6.1.3</b>	<b><i>Facilitation of Market Linkages</i></b>			
6.1.3.a	Institutional arrangements	ALP/E and IP	25,000	2007
	<b><u>Sub-total</u></b>		<b><u>25,000</u></b>	
<b>Total Estimated Cost of Short-Term Strategy</b>			<b><u>922,000</u></b>	

This cost estimation holds on the assumption that the proposed medium-term strategy will implemented, as most of the activities will be continued thereunder

**Table 12. Budget Estimate for the Implementation of the Medium-Term Strategy for Perennial Horticulture (FY2006-2009)**

<i>Activity</i>	<i>Description</i>	<i>Implementer</i>	<i>Estimated cost (US\$)</i>	<i>Fiscal year</i>
<b>6.2.1</b>	<b><i>Identifying Markets, Crops and Communities</i></b>			
6.2.1.a	Identifying Markets	ALP/E STTA	60,000	2006-07
6.2.1.b	Identification of areas with productive potential	ALP/E STTA	35,000	2006
6.2.1.c	Identification of target crops	ALP/E	6,000	2006
	<b><u>Sub-total</u></b>		<b><u>101,000</u></b>	2006
<b>6.2.2</b>	<b><i>Establishment of Commercial Orchards</i></b>			
6.2.2.a	Procurement of quality germplasm	ALP/E, IP	50,000	2006-08
6.2.2.b	Production of 900,000 saplings	IP	810,000	2007-09
6.2.2.c	Distribution of planting material	IP	202,500	2006-08
	<b><u>Sub-total</u></b>		<b><u>1,062,500</u></b>	
<b>6.2.3</b>	<b><i>Building the Capacity of Rural Communities to Meet Market Requirements</i></b>			
6.2.3.a	Production manuals and training materials (5 crops)	STTA, COMM. SUPPLIERS	75,000	2006-07
6.2.3.b	Training extension agents and CARs <sup>a</sup>	IP	1,200,000	2007-09
6.2.3.c	Establishment of farmer associations	IP	250,000	2006-08
	<b><u>Sub-total</u></b>		<b><u>1,525,000</u></b>	
	<b><u>Total Estimated Cost</u></b>		<b><u>2,688,500</u></b>	

## 5. Timetable

ACTIVITY	DESCRIPTION	2006				2007				2008			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>1.</b>	<b><i>Short term</i></b>												
<b>1.1.</b>	<b>Improving productivity and quality</b>												
1.1.a.	Selection of beneficiaries												
1.1.b	Baseline survey												
1.1.c	Provision of practical training-tree mgt.												
1.1.d	Practical training post-harvest mgt/pack.												
<b>1.2</b>	<b>Enhancing returns through collective action</b>												
1.2.a	Establishment of collection centers												
1.2.b	Training and T/A in institutional dev.												
1.2.c	Identification of prod/marketing clusters												
<b>1.3</b>	<b>Facilitating market linkages</b>												
1.3.a	Facilitation of institutional arrangements												
1.3.b													
<b>2</b>	<b><i>Medium term</i></b>												
<b>2.1</b>	<b>Identification of markets, crops and communities</b>												
2.1.a	Market identification												
2.1.b	Identification of areas suitable for promising crops												
2.1.c	Identification of target crops												
<b>2.2.</b>	<b>Establishment of commercial orchards</b>												
2.2.a	Procurement of quality germplasm												
2.2.b	Production of 0.9M saplings												
2.2.c	Distribution of planting material												

ACTIVITY	DESCRIPTION	2006				2007				2008			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>2.3</b>	<b>Building the capacity of rural communities to meet market requirements</b>												
2.3.a	Production manuals and training materials												
2.3.b	Training extension agents												
2.3.c	Establishment of farmers associations												
<b>2.4</b>	<b>Inclusion of beneficiaries in collateral activities</b>												
2.4.a	Cash for work												
2.4.b	Vegetable production												
<b><i>Cross-cutting activities</i></b>													
a)	Feasibility studies and support services for agro-processing												
b)	Market information system												
c)	Extension support system												
d)	Geographic information system												

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