A National Survey of Master Gardener Volunteer Programs

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INTRODUCTION

For over 30 years, Master Gardener volunteers have delivered a highly popular information service to the general public through a variety of locally based programs across the United States. There are several informative descriptions of selected programs and of key aspects of the Master Gardener movement as a whole[1]. To gain a more comprehensive view, however, a national survey of state and local programs was undertaken through the Cooperative State Research, Education, and Extension Service of USDA in late 1999 and early 2000. This document reports on the results of this survey which, though by no means comprehensive, highlights the size and organization of Master Gardener programs across the country and the wide range of projects in which the volunteers participate. The report also discusses common issues and challenges related to the quality, performance and management of programs. It is hoped that the survey findings and related discussion will help Master Gardener programs become yet more valuable and effective.

CONTEXT AND PURPOSE OF THE SURVEY

Master Gardeners first appeared in 1972 when David Gibby, a County Agent in Washington state, trained a group of volunteers to help local Extension staff swamped by the demand for horticultural information from increasing numbers of suburban residents. His idea spread rapidly. Facing similar problems, many county extension offices developed their own Master Gardener programs and today the movement is a major national volunteer effort, particularly in high density areas. A publication by the Council for Agricultural Science and Technology (CAST) [2] notes "more than 1,000 active training programs in all 50 states and four Canadian provinces ".

Three main reasons led to the exceptional growth and popularity of Master Gardener programs:

Meeting a need : With the demographic shift to the suburbs after WW II, gardening and related activities became increasingly popular, and the demand for advice on plant husbandry grew dramatically. Following a long-standing rural tradition, many people looked to the CES for help but traditional Extension programs were ill-equipped to respond; typical outreach focused on production agriculture and local offices could not handle the large number of residents requesting services in increasingly suburban counties. Small wonder, therefore, that county after county followed David Gibby's example and developed 'consumer' horticulture programs that relied heavily on volunteer staff.

Local focus: Most volunteers were recruited from and served in their local

communities. Acting as staff *and* stakeholders, they were well-placed to understand local needs, play a key role in the selection and design of outreach projects, stimulate the development of new topic areas, and test out new approaches. Not surprisingly, Master Gardener outreach projects became very popular.

Quality of information: From the outset, Master Gardener programs maintained close ties to the Cooperative Extension Service (CES) which for years had been providing agricultural producers with objective, relevant, science-based advice based largely on research undertaken at state land-grant institutions. Most volunteer training and outreach activities were supervised by county Extension staff and the accuracy and relevance of information was supported through linkages to the land-grants. In other words, the programs were held to a high standard and the public had confidence in them.

The structure of Master Gardener programs has changed little over the years and is remarkably consistent across the country. Supported by state CES and organized mainly at the county level, volunteers receive a sound and extensive training in mostly horticultural topics. In return, they are expected to provide significant service on a variety of outreach projects that provide the general public with gardening and landscape information. Volunteer retention is usually high and additional training is normally offered to returning volunteers. It is important to note that these programs differ from most other state and county Extension efforts in that their primary objective is to develop of a cadre of highly-skilled, unpaid staff.

The need for the quality information and advice that Master Gardeners provide is greater than ever. Each year millions of urban households across the USA engage in the annual cycle of planting and maintaining ornamentals and harvesting food crops in their yards. The recreational value of this pastime, though hard to measure, is highly significant to millions of people. In economic terms, consumer horticulture is one of the fastest growing segments of the agricultural economy and stimulates local economies through sales and jobs growth[3]. Further, since the vast majority of the U.S. population lives in urban and suburban settings, the gardening practices of individual households have a significant effect on the environment. Finally, as local government budgets shrink, a highly trained local volunteer force like Master Gardeners may be able to move into new and exciting roles.

The following report describes the results of the national survey of Master Gardener programs. Findings confirm that these are a large, public resource with strong local roots, reaching millions of households across the country on a regular basis. Data also show the direction and management of these programs require a large share of CES efforts at a county level. A key issue, therefore, is ensuring that these programs receive appropriate programmatic and policy

support at state and regional levels, particularly when county resources are declining. The report also discusses three key issues arising from the data: volunteer quality, program management concerns, and the value of current outreach projects. It is hoped that this discussion will be useful to national, state and local leaders concerned with Master Gardener resources.

METHODOLOGY

This report is mainly based on a survey of State Coordinators, the land-grant university faculty member in each state responsible for Master Gardener programs and most likely to have a thorough knowledge of their operations. Additional information came from the literature, personal communications, and the author's own experience.

The survey was drafted by the author and refined by members of the International Master Gardener Committee. Made up of two Extension staff or their equivalents and two Master Gardener volunteers from each of the four USDA regions and Canada, plus several Associate representatives, this committee greatly strengthened the investigation through their individual state level experience and by providing a unique perspective on programs beyond the state level.

Surveys were sent to 48 states with active Master Gardener programs (see Appendix A for a list of states involved.) In most cases, responses were received from State Coordinators but in two states programs were running without a Coordinator and information was obtained from others working closely with the programs. 42 out of 48 states returned the survey (87.5%.) Such a high rate encourages confidence in the validity of the data and their ability to support generalizations.

Respondents were asked to include information on all Master Gardener programs within their states, and most did so. In two states, however, surveys were returned that described programs in only the most populous counties in those states. These responses were accepted since the amount of undercounting was likely to be slight.

Survey questions were kept to a minimum to encourage a good response rate (see Appendix B for survey questions.) Several focused on program size and organization and generally requested numerical or percentage answers. Here respondents were asked to condense the variability of all county level programs into a single state response, without distinguishing between inter- and intra-county variability. Other questions were more open-ended, focusing on types of service activities and strengths and weaknesses of programs. Here respondents were asked to describe the variation among the local programs. In general, the level of detail and consistency of responses show that most respondents took considerable pains to provide as thorough and precise a response as possible, again encouraging confidence in the data as well as demonstrating the strong commitment State Coordinators have to their programs.

The number of responses analyzed for any question was always lower than the 42 surveys returned. In some cases respondents were unable to answer all the questions, in others some responses were deemed flawed and rejected to ensure a strict analysis. The number of responses analyzed for any question is noted as "n" in the results tables. In Table 2, for example, 39 out of 42 responses were used to determine how many Master Gardener volunteers were trained in 1998/99, (n=39).

Only a limited statistical analysis of the data was performed[4], the author preferring to under- rather than over-analyzing results. Readers are encouraged to draw their own conclusions from the numbers. A question relating to length of service (2b) could not be analyzed because so few states responded, partly because records were unavailable and partly because the question was somewhat ambiguous.

Most of the data collected related to new volunteers accepted into Master Gardener programs in 1998/99 but, in the absence of any information to the contrary, it is assumed that results are generally applicable to other years.

RESULTS

This section provides a basic tabulation and description of survey responses. Results are presented on survey coverage, characteristics of volunteers, outreach projects, program administration and management, and benefits and problems encountered.

1. Survey Coverage:

The survey collected information from 87.5% of the 48 states with active programs. The high response rate and level of participation by most respondents indicated that the findings and observations derived from the survey were a good reflection of the diversity and scope of Master Gardener programs across the country.

Table 1: **Number of States Surveyed and Reporting**

Number of States Surveyed	48
Number of State Responses Returned	42
Percent Return	87.5

2. Characteristics of Master Gardener Volunteer Programs:

Enrollment Basic enrollment data on the 1998/99 intake of volunteers showed an estimated 17,269 volunteers joining Master Gardener programs in 39 states, with state enrollment ranging from 50 to 2,000. In nearly half the programs, volunteers had been on a waiting list before being accepted into a program and were screened before acceptance in nearly three quarters of the programs.

Costs of enrollment varied considerably, with volunteers paying between zero and $285 per year. Two mean enrollment costs were calculated because some respondents reported state costs as a range and some as a mean. In five states volunteers were not required to pay any training fees. Some states noted that finding funds to cover training costs (lecturers, training materials, facilities) was a constant problem.

Table 2: **Enrollment Characteristics in 1998 / 99**

Number of New Volunteers Enrolled	17,269
Range of Enrollees per State	50 - 2,000
Percentage of Programs with a Waiting List for Enrollment	42
Percentage of Programs that Screen Applicants	74
Mean Dollar Cost of Enrollment	77 or 88

(Enrollment responses analyzed: n = 39; Waiting List responses analyzed: n = 26 ; Screening responses analyzed: n = 28; Enrollment Fee responses analyzed: n = 34)

Training and Service The vast majority of Master Gardener programs required volunteers to provide service for the training they receive. Note that volunteer time commitment was significant. About half the states reporting required over 40 classroom hours for training and over 40 hours of service in outreach projects to become a Master Gardner.

Survey results indicated that the hours of training required matched the number of hours of service required in 32 of 38 states examined. In six states, hours of training exceeded the hours of service required. One state reported no service requirements.

Table 3: **Training and Service Requirements**

Number of Hours	**Training**	**Service**
over 40 hrs	21	19
31 - 40 hrs	16	17
21 - 30 hrs	2	2
20 or less hrs	1	1

(Training responses analyzed: n = 40 ; Service responses analyzed: n = 39)

3. Outreach Projects:

Current Projects Table four summarizes the range of outreach projects staffed by Master Gardeners. It is very unlikely that the list includes all types of outreach projects across the country since respondents were asked to report only on the three projects with greatest volunteer participation in their state.

Projects were ranked by the number of volunteers participating, giving an indication of the importance of various outreach projects in terms of the level of effort. Projects could also be ranked by the number of clients reached.

The structure of this survey question was necessarily open-ended. While respondents did not always distinguish between the outreach approach used and the topic area covered, it is fair to note that 'gardening' based programs were dominant.

Table 4: **Volunteer Participation and Clients Reached**

Project Description	**# volunteers**	**% total**	**# Clients**
Staffing booths, displays at community gatherings	3,777	30%	1,228,600
Horticultural advice by phones mostly county, one regional	3,383	27%	202,303
Food security projects Plant-a-Row, Harvest for the Hungry..	1,525	12%	n/a
Staffing Diagnostic Clinics in libraries, garden centers....	979	8%	23,720

Maintenance of community gardens	894	7%	14,725
Presentations to garden clubs, civic groups...	861	7%	18,000
Teaching Gardening Skills in schools, local communities...	523	4%	14,735
Developing, maintaining demonstration gardens	150	1%	10,000
Horticultural therapy projects	128	1%	3,460
Media-based projects, e.g. articles in newspapers, magazines..	125	<1%	303,000
Working with inmates	76	<1%	1,000
Youth focused projects	66	<1%	2,000
Research / Field trials	52	<1%	n/a
Water Quality projects riparian buffers....	35	<1%	260
Assisting at annual symposia	30	<1%	120
Teaching short courses	30	<1%	250
Developing or maintaining a website	1	<1%	1,000
Administration of the local Master Gardener program	2 states		n/a

(Responses analyzed: n = 37)

Coordinator Preference Table five summarizes the type of service projects that State Coordinators wanted Master Gardeners to work on, i.e. an indication of state priorities. Projects reported were grouped into10 types (column one) with examples of each type (column two) and the number of times each type was selected by Coordinators (column three).

Again, this survey question was necessarily open-ended and a wide range of projects were reported, some focusing on topics and others on outreach approach. Categorization was inevitably somewhat arbitrary and readers may wish to re-order the list. Nevertheless, from a comparison of tables four and five it is clear that current outreach projects did not always match State Coordinator priorities.

Table 5: **Service Projects Preferred by State Coordinators**

Project Type	**Specific Examples**	**Times Selected**
Focus on Youth	teaching gardening to young people, with classroom and hands-on activities; Junior Master Gardener programs; Youth Diversion Programs...	19
Gardening with an educational focus	demonstration gardens; outdoor learning centers...	4
One-on-one advice to general public	hotlines; clinics; walk-ins to county extension offices ...	13
Environmental Education	sustainable landscaping; selecting native species; integrated pest management; nutrient management...	9
Non-educational projects	state plant collections; identification of local plants; neighborhood beautification; gardening conferences and tours...	8
Low-income projects	food production; Plant-a-Row; Habitat for Humanity...	6
Master Gardener program support	administration; training and mentoring new volunteers; fund-raising...	6
Community education	classes, workshops, speaking engagements...	6
Horticultural therapy	horticultural therapy...	5
Information Technology	website development...	1

(Responses analyzed: n = 32)

4. Program Administration and Management:

Master Gardener programs are not easy to run. Most include at least five components: volunteer recruitment, training and management, and the design and supervision of service projects. Each component presents unique challenges. Survey questions were designed to take stock of the experience that exists in managing these programs, and to better understand options available to improve the effectiveness of these programs.

Local Management Table six shows that Master Gardener programs were generally managed by Extension at the county level. County Extension staff (state or county funded) accounted for 85% of administration, 91% of training, 69% of program design, and 80% of supervision. Clearly, Master Gardener programs relied very heavily on the county Extension system in the U.S..

A notable finding from the survey was the lack of state level involvement in administration (3%) , training (0%), project design (3%) and supervision (2%). This might account, among other things, for the disparity between actual type of projects being implemented and State Coordinator priorities reported under tables four and five.

Table 6: **Program Administration and Management**

	Administration	**Training**	**Project Design**	**Supervision**
Extension Agent	71%	48%	56%	58%
County Coordinator	14%	43%	13%	22%
Volunteer	12%	4%	28%	18%
State Coordinator	3%		3%	2%
Other	-	5%	-	-

(Administration responses analyzed: n = 30; training responses analyzed: n = 33; design responses analyzed: n = 32; supervision responses analyzed: n = 33)

State Coordinator Input Table seven gives a closer look at the support provided by State Coordinators. The first six functions in column one were pre-listed in the survey while the remainder were added by respondents under an 'other' category.

The results show that a substantial portion of their efforts were spent on: developing educational materials, reporting, promoting state level programs, long range planning, expanding the use of information technology and liaising between state specialists and counties.
It is striking that no respondent mentioned resource mobilization to support program implementation as a key function. This absence may derive from the survey design and it is unfortunate that this function was not pre-listed. Another explanation, however, may be that State Coordinators did not see resource mobilization as an important function.

Table 7: **State Coordinator Functions**

Functions	**# States Selecting**	**% Total Responses**
Develop Educational Materials	27	82
Develop Program Reports & Impact Statements	26	79
Promote State Level Programs	25	76
Long Range Planning	24	73
Expand Use of Information Technology	24	73
Liaison Between State Specialists and Counties	23	70
Training County Agents to Administer Programs		<6
Evaluate Training Programs		<6
Network Between Master Gardener Programs		<6
Develop Volunteer Management Materials		<6
Official Spokesperson		<6
Trouble Shooting County Programs		<6

(number of responses analyzed n =)

5. Benefits and Problems

Master Gardener programs have blossomed across the USA, among other reasons because of the benefits they offer to the CES especially at the county level, and the survey sought to identify and articulate some of these.

Table 8 synthesizes the responses into six perspectives (column one) with verbatim examples (column two). The perspectives are ranked by the frequency they were mentioned. Details will be discussed more fully in the following section of the report.

Table 8: **Benefits from Master Gardener Programs**

Item	**Verbatim Examples**

Major increase in the number of clients CES can serve	Can reach a lot more people; tremendous outreach; staggering level of involvement...
Major increase in the range of topics / projects CES can offer	!!!! (*Sic)*
Greatly improves CES's connection to local communities	Offering a stakeholder flavor; provide non-threatening outreach to community; make a difference in communities; increase community awareness of Extension; generate solid community support...
Community respect for the quality of Master Gardener volunteers	Diverse, highly motivated and knowledgeable group; devoted, caring, enthusiastic, dedicated; always ready to help....
Benefits to volunteers	Opportunities to serve; educational opportunities otherwise unavailable; on-going learning opportunities; camaraderie...

(number of responses analyzed n = 24)

Table nine identifies 7 key constraints and concerns as the most common challenges posed by Master Gardener programs. Many of these challenges were the inevitable outcome of insufficient resources and, as above, details will be discussed more fully in the following section of the report.

Table 9: **Challenges associated with Master Gardener Programs**

Item	**Verbatim examples**
Serious lack of resources to manage the programs, in particular to train volunteers	Program is limited only by resources ; agent has not sufficient time to run classes and manage volunteers; volunteer demand for training outpaces resources ; need resources for adequate training; lack of professional support staff at state and county level; lack of funding for innovative projects; lack of funding to measure impact....
Lack of advanced training for senior volunteers	Advanced training in subject matter and delivery strategies; keeping up with new research on horticultural issues; new communication skills...

Need for improvement in volunteer recruitment and retention	Recruit and select people who really want to be Master Gardeners; keeping volunteers involved over one year; maintaining continuity with coordinators and volunteer leaders...
Management of volunteers may overload local capacity (frequently mentioned)	May need more hand-holding than agent has time to supply; program management and support difficult in small rural counties; Master Gardeners are high maintenance; personality conflicts...
Poor management skills at the County level	Some agents don't work well with Master Gardeners; agents lack skills in managing volunteers; some agents want to micro-manage...
Low volunteer commitment to CES	Need to keep volunteers focused on Extension goals; having them understand the role of extension and education; communities don't always realize Master Gardeners' links to Extension

(number of responses analyzed n = 30)

DISCUSSION

The Master Gardener movement is a national organization supported by strong local grass root linkages and managed by committed county agents with limited resources. How important is this movement? Findings presented in the previous section show that perhaps no other CES effort that provides quality technical advice to as many US citizens and households as are reached through Master Gardener programs on a regular basis. Taking 1998/99 as a typical year, over 17,000 new volunteers were enrolled in the 39 states for which data are available. It is likely, therefore, that in any five year period over a hundred thousand volunteers are brought into the system and, given the outreach achieved per volunteer, over 10 million people receive information and advice through volunteer outreach projects. The movement has been operating since 1972 and it appears that it is still growing.

Relying chiefly on survey data, this section of the report looks at three key aspects of the movement: volunteer quality and retention, the relationship between Master Gardener programs and the CES, and the value and impact of these programs. It is hoped that the observations and suggestions offered here stimulate discussion on future directions for Master Gardener programs and promote the long term health of the movement

Profile of a Master Gardener

Master Gardener programs are defined by the quality of their volunteers. Unlike most volunteer opportunities, these programs demand an exceptional level of technical expertise from their

members. Volunteers provide highly specialized information to the general public and generally do so without direct supervision from paid staff. State Coordinators are justly proud of the level of knowledge displayed by volunteers and without it the quality of their outreach services could not be maintained.

To maintain such high volunteer standards, technical training must always be a major component of the programs, and survey results confirm this. In their first year(s), virtually all participants receive a solid grounding in horticulture and related topics. Advanced training and specialization are frequently available, particularly to those who remain in a program for several years. Moreover, in many programs volunteers are asked to complete further hours to maintain an active status. State and local Extension personnel have primary responsibility for the quality of this education and provide the bulk of curriculum development and instruction.

The number of hours donated and the reliability and level of effort volunteered in Master Gardener programs are exceptional. To attain the required skills the vast majority of volunteers attend at least 30 hours of instruction in their first year alone, and many programs require at least two years for certification. Basic training is usually held on a weekly basis once a year, so volunteers must be willing to participate regularly. Training is necessarily demanding, standards are high and a serious effort is needed to graduate from most classes.

In almost every case volunteers devote at least as many hours to service activities as to training and again their participation must be reliable since public services cannot be run with sporadic attendance. Finally, it is important to recognize that many of the service activities themselves are challenging; transferring technical knowledge to the general public requires skill and concentration.

It is interesting to compare this level of commitment to current trends in volunteerism across the U.S.. An analysis reported by the Independent Sector[5] shows that while more and more people are volunteering, the number of hours per volunteer is falling, and only 39% of volunteers prefer to work on a regular schedule. In other words, "Americans are volunteering in record numbers, but for fewer and fewer hours each year. The episodic or short term volunteer hits a homeless shelter once a year, helps out at a charity auction, and baby sits at their church one Sunday a year"[6]

Clearly, Master Gardener volunteers do not fit this pattern, indeed the quality of the advisory services they provide could hardly be maintained with mainly episodic volunteers. Fortunately, there seems to be a healthy supply of people willing to offer the long term commitment required. 42% of programs have a list of volunteers waiting to enroll in the program and 74% of programs have the luxury of screening potential volunteers to ensure their commitment and suitability.

It is unfortunate that survey results on length of service could not be analyzed with confidence, since loyalty and retention are important to any program that relies so heavily on volunteers and invests so much in their training. Not only are training costs lower for returnees, but their skill level increases over time both in technical areas and, perhaps even more importantly, in their ability to deliver information through their outreach activities. Moreover, the longer volunteers remain in a program the more effective stakeholders they become, seeing more clearly where it can contribute to local needs and how best to reach the clients.

Preliminary data analysis does show a high retention rate among volunteers, and personal accounts leave no doubt that many volunteers return year after year. It is common, for example, for people to remain actively involved for over 20 years and their potential value must be considerable. On a related topic, however, some respondents mentioned the problem of inactive volunteers, people who have been enrolled in the program for several years, perhaps come to annual training meetings, but take little part in volunteer outreach activities. This can be a serious loss to a program.

The survey did not investigate the demographic characteristics of volunteers (e.g. gender, age, educational or professional background) and with hindsight this was a mistake. To maximize value from volunteers, program design must take into account their particular skills and their specific needs. Conventional wisdom held that Master Gardeners were traditionally home-based women and retirees because these groups were thought to have more free time to devote to the program. Interestingly, some Coordinators noted that over the last few years programs began to attract more people who were currently employed, came from minority groups, or were early retirees. Such observations also match the Independent Sector report.
This discussion of volunteer characteristics is by no means comprehensive. Further investigation could prove useful, for example in the areas of training, retention and new outreach opportunities.

Volunteer Instruction Since substantial training is essential to Master Gardener programs, it is reassuring that so many hours are devoted to the educational component of the programs. Less reassuring, perhaps, is that over 90% of this education is provided by county level staff. This observation is by no means a reflection on the competence of local staff. Rather it is a recognition that the level of effort required every year may well be a severe burden. There is also a danger that, with countless repetitions, training may become stale and perhaps out of date. As a corollary, retention could be reduced as volunteers also become stale and, to put it bluntly, bored.

Training Content It would be useful to learn more about the quality and content of local classes. For example, how satisfied are volunteers with the training they receive, and do some leave a program because of dissatisfaction with the training? Do classes balance an essential grounding in horticultural principles with education on topics particularly relevant to local concerns, or on topics that would allow volunteers to branch out into new and exciting outreach

activities? How frequently are basic annual training classes revised? Respondents frequently pointed out the need for additional training opportunities, but perhaps new topics could be included or extra depth added to basic training if other items were condensed or eliminated.

Volunteer Retention Assuming that volunteer retention generally strengthens a program, a closer look at programs with high retention rates might highlight which factors encourage volunteer loyalty. Do senior volunteers have sufficient opportunities for skill development, is there sufficient emphasis on'graduate training'? Note that State Coordinators highlighted lack of resources for specialized training as perhaps the most significant challenge facing Master Gardener programs. Do effective and experienced volunteers have opportunities for increased responsibility? Are programs making full use of additional skills volunteers may bring, whether in training, program administration our outreach? Is there adequate recognition of long standing volunteers?

In some cases, volunteer retention was seen as a drawback, for example when senior volunteers are resistant to change and hamper a program's ability to adapt to new situations or seize new opportunities. Further investigation could show how widespread this kind of problem may be, and how different programs across the country are dealing with it.

New Volunteer Characteristics If the demographic characteristics of volunteers are indeed changing or expanding, then local programs may be facing new pressures, perhaps to target different client groups or to adopt new outreach approaches, or to accept increased involvement by volunteers in program management. While such new pressures are likely to be re-invigorating, more traditional programs may find some difficulty in accepting the need for change. Case studies of how some programs have coped with such situations could be extremely useful.

Relationship Between Master Gardener Programs and CES

Survey data show that ties between CES and Master Gardeners remain close and provide significant benefits to both groups. Volunteers greatly increase the outreach capacity of the CES, particularly in urban /suburban areas, and the potential impact of Master Gardener projects is startling. For the 39 states reporting, over 1,800,000 clients were contacted in one year alone and this number must be an undercount, since it was derived from only the 3 most successful projects in each state. Moreover, based on the Extension model that useful information spreads beyond first contacts to local communities, it is reasonable to assume that much of the information provided by Master Gardeners (e.g. on lawn and landscape management which is relevant to many people) will readily extend first to clients' households and from there throughout their neighborhoods. While it would be interesting to investigate the multiplier effect of Master Gardener advice more thoroughly, under the above assumptions one could reasonably expect current outreach projects to reach at least 10 million people annually! In other words, a large portion of the U.S. is likely to be affected by Master Gardeners and they may provide the largest

direct contact service within CES.

For its part, CES continues to play a central role in ensuring the quality and integrity of Master Gardener programs. Extension is responsible for developing and maintaining the technical expertise of volunteers, with county staff undertaking 85% of the training, identifying and providing qualified teachers, and working with State Coordinators to upgrade the curriculum and develop new training materials. Local staff design 91% of service activities and supervise 69 % of the Master Gardener activities. Extension linkages and supervision guarantee the quality of information provided through volunteer outreach. In large measure, Extension covers the financial costs of running a program, not least providing insurance against accidents and malpractice suits, and county personnel account for 80% of program administration. As well as developing educational materials, State Coordinators liaise between state specialists and county staff, handle report requirements, support long range planning and promote state level programs.

There is a concern that ties between Master Gardeners and CES are weakening as resources dwindle and local offices become unable to run the programs adequately. At the state level, Master Gardeners are often seen as the solution for under-staffed sub/urban counties, but without an adequate management structure (ratio of paid staff to volunteers, management training, etc.) these programs may be more of a burden than a solution for county Extension. Working with volunteers is always time consuming and by their nature Master Gardener programs are particularly expensive to manage [7]. Survey responses show that volunteers are often considered 'needy' and while this criticism applies to most volunteer programs it may be particularly relevant with a relatively large volunteer force that requires considerable training and has an important role in outreach delivery. Although Master Gardeners show great loyalty and are anxious to make a difference, they are unlikely to provide the same level of acceptance or commitment as paid staff. This poses a considerable challenge for Extension personnel running outreach services that are mostly staffed by volunteers.

For their part, Master Gardeners may become dissatisfied with the level of support and appreciation they receive. From their perspective, volunteer services are free; indeed some Master Gardeners and State Coordinators resent training fees for this reason. Furthermore, it is hard to maintain that Master Gardener programs are too costly since investigations have shown them to be extremely cost effective in terms of outreach. An analysis in Minnesota [8] attributed an hourly dollar value to Master Gardener volunteer service, offset against training costs. The value reached was impressive: "For each $1 of training cost, the volunteer gave back $9.70" in the first year alone. This number is not an hourly pay rate for volunteers, rather it is the "value of volunteer time" [9], calculated by taking the average hourly wage for nonagricultural workers and increasing it by 12% as an estimate of fringe benefits. Similarly, a Florida study[10] noted over $2 million in net in-kind donations from Master Gardener volunteers for 95-96, measured by volunteer service hours at the average extension salary minus development and implementation costs.

It is surprising how few state or national funds are devoted to running Master Gardener programs. These programs provide Extension with a major outreach tool and opportunity to meet its mission. Moreover, the volunteers are an important conduit to sub/urban populations which could help leverage support and financial commitment. Nevertheless, they must compete with other Extension programs for generally declining county resources.

Unfortunately, with Extension resources dwindling, significant increases in state funding for Master Gardener programs at the county level is very unlikely. It is important, therefore to look for ways to support Master Gardener programs and to keep their ties to Extension strong. A few options are discussed below:

Outside Resources Many Master Gardener outreach projects align well with the activities of other public and private groups serving local communities and the environment. .For example, horticultural therapy and prisoner assistance projects could be of value to groups providing social services, while stream-bank erosion control and urban forestry are important issues to environmental non-profits as well as local governments. Other Extension programs could also benefit. In particular, volunteers anxious to work with youth could fit well under a 4-H program.

Collaboration with such groups can greatly increase resources available to local Master Gardener programs. Many local governments, for example, recognize the value of the volunteers and provide funding for a Volunteer Coordinator position. Terms of collaboration, however, are extremely important. Master Gardeners are not 'free labor;' their programs are costly to administer and volunteers should not be simply wooed away to work on other projects. Negotiating mutually beneficial collaboration is tricky as well as time consuming for local staff. Help from State Coordinators would be particularly useful here, as well as encouraging volunteer participation in the kinds of outreach Coordinators prefer.

Volunteer Training Development of educational materials is seen as a key function by State Coordinators but they do not appear to participate much in the classes. Perhaps more strikingly, State Specialists have little or no input in training. It is understandable that in states with many Master Gardener programs, state level staff could not be expected to play a major role, but it might be possible for a portion of State Subject Matter Specialists' time to be explicitly designated for Master Gardener training. Greater involvement in volunteer training by state level could reduce the workload for county staff and improve volunteer quality.

Staff Training It was surprising that survey responses rarely mentioned staff training in volunteer management issues, although a quick web search shows how important this topic is to volunteer organizations. Where counties rely heavily on Master Gardener outreach, it is surely

reasonable to offer paid staff training on topics such as volunteer recruitment, retention and management, project design, record-keeping and evaluation, legal issues and risks associated with volunteer projects, and fostering good volunteer : staff relations.

New Volunteer Roles Many volunteers have skills and interests that could benefit their programs in addition to their horticultural expertise. If carefully designed, volunteer involvement in administration and management of local programs could significantly ease the burden on county staff. The Bexar county Master Gardener volunteer program [11] provides an interesting example of a highly autonomous volunteer group.

In summary, a close relationship benefits both CES and Master Gardeners. It is unfortunate that lack of funds is causing strains on some local partnerships but it is fair to say that most county staff and volunteers continue to work well together despite ever increasing populations to serve and generally declining resources.

Value and Effectiveness of Master Gardener Outreach Activities

The value of Master Gardener programs is a crucial issue. Given the commitment of public resources and since volunteers reach substantial numbers of households, it is important to assess the effects of these programs on the interests of society and to ensure that public resources are used as effectively as possible. The quality of volunteers and the effectiveness of program organization count for little unless programs are successful at providing useful, objective, research based information to the general public. Other program outcomes are secondary. Even volunteer satisfaction, volunteer training and program management, although obviously important, are a means rather than an end in themselves.

The survey did not attempt to measure the value of Master Gardener programs. What is considered valuable is likely to vary widely, depending on state and local needs. Morever, since programs were initially conceived of as support for local extension staff rather than as strategic interventions in themselves, data on the effects of these programs were likely to be scarce, with local Extension services perhaps assessing programs on how well they handled a high volume of citizen requests, rather than on their impacts or outcomes. Survey findings do, however, shed some light on three issues highly relevant to program value: the focus of outreach projects, the effectiveness of the approaches used, and how the focus and approaches are selected.

It is important to understand how well outreach projects are aligned with priorities for the public good. With less than 15% of volunteers working on what are clearly non-gardening projects, survey results indicate that the focus of Master Gardener outreach remains remarkably close to the original mandate of providing gardening advice to the general public. While it is reasonable to

assume that the information provided is valuable to individuals, it is not known how appropriate this continued focus on gardening is. Long-standing outreach activities should be flexible enough to take account of changing needs at the county or state level. Perhaps the public would be better served if Master Gardener outreach were redirected into areas such as environmental protection, horticultural therapy, or pollution reduction.

Resources for Master Gardeners are scarce, so it is essential to judge the cost-effectiveness of the various outreaches used by volunteers. The survey lists a wide range of service projects and no doubt there are many more than recorded, but a few clearly get the lion's share of volunteer time. In particular, 30% of all volunteers participated in booths and displays and accounted for 67% of all clients reached. The effectiveness of booths and displays is questionable, however. For example, volunteers staffing a largely un-visited booth for 8 hours would perhaps make more of a difference if they worked on a busy hotline for two hours. Similarly, there is no guarantee that clients will read from pamphlets collected from a booth.

To gain a clearer understanding of the value of Master Gardener programs one must know how the focus and approach of outreach projects are decided, if there is sufficient due diligence or if the process is too idiosyncratic. Survey data show that the vast majority (97%) of service activities are designed by local staff and volunteers. This may be a good thing. Volunteer and county Extension ties to communities may produce popular outreach projects tailored to local needs, and volunteer effort, loyalty and satisfaction may be increased when participants are allowed to design their own projects. On the downside, however, projects selected almost solely through volunteer popularity may be too short lived as the individual volunteers who supported them leave. Conversely, projects may outlive their usefulness for years because of their popularity with volunteers or county staff, or even because of inertia.

Two related, strategic implications emerge from the above summary:

Selection of Outreach Projects Steering Master Gardener outreach should be a shared responsibility. Volunteers themselves contribute considerable time and effort and undoubtedly deserve to influence local programs, but county Extension should also be involved, and local government to the extent that local resources are used to support the programs. State Extension can also play a critical role in shaping activities that deal with wider issues, and is ideally placed to advise and direct the outreach methods used. Survey data suggest, however, that State Coordinators have little input into outreach focus or approach.

Measuring the Effectiveness of Outreach Ultimately, the value and effectiveness of Master Gardener programs can best be understood by assessing the impact of their outreach. Unfortunately, it has been reported informally on several occasions that there is a 'lack of interest

in many states for setting up reporting and accounting structure.' There may be a perception, even at the State level, of Master Gardener programs as a 'band aid' or low-cost way to meet the challenges of a high density clientele [12], rather than as an important tool to help Extension meet important priorities.

Useful models are available for assessing the value of volunteer programs. For example, in 1996 the Senior Corps (www.seniorcorps.org) developed an outcome based approach that demonstrates the focus and effectiveness of their efforts. The Corps' framework [13]allows volunteers to show how they focus energies and resources on meeting high priority local needs, deliver benefits and results to the community, gauge and measure how the activities of the volunteers get results in communities, and raise the importance of seniors as valuable community resources that justifies investment from public and private sectors.

Given staff shortages and the cost of training and supervising volunteers, solid information on the impact and accountability of service activities is imperative. Such information could greatly increase their value, for example by convincing volunteers which long-running projects should be terminated or which state-promoted projects are worth accepting. Equally important, Mater Gardeners are valuable and highly trained and devote considerable time and effort to their programs. They deserve, therefore, to know if local programs are making the best use of their talent and commitment.

CONCLUSION

Master Gardeners have been providing valuable service across the U.S. for many years with millions of people receiving sound, technical advice on horticultural topics, thanks to the commitment of volunteers and to the level of training they have received. Today the need for these volunteers is greater than ever as the growing U.S. population and its increasing concentration in suburban areas expand the demand for gardening-related advice.

The environmental and other stresses brought on by population density may provide new opportunities for Master Gardener volunteers. Expectations from publicly funded programs have changed and issues such as the quality and content of volunteer training, and the design and relevance of service projects may need to be re-examined to ensure the value of the programs to volunteers, to Extension staff and, above all, to clients.

Traditional ties between Extension and Master Gardeners generally remain strong but problems between the partners are evident and may be exacerbated by diminishing Extension resources. While volunteers can greatly increase the outreach of Cooperative Extension in an urban / suburban area, a local program could become too expensive for an Extension office to administer.

It is ironic that relatively few extra resources could greatly increase the value of the program.

APPENDIX A STATES RECEIVING SURVEYS

Alabama	Illinois	Missouri	Pennsylvania
Alaska	Indiana	Montana	Rhode Island
Arizona	Iowa	Nebraska	South Carolina
Arkansas	Kansas	Nevada	South Dakota
California	Kentucky	New Hampshire	Tennessee
Colorado	Louisiana	New Mexico	Texas
Connecticut	Maine	New Jersey	Utah
Delaware	Maryland	New York	Vermont
District of Columbia	Massachusetts	North Carolina	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin

APPENDIX B SURVEY QUESTIONS

A. Size and Organization of Your State Program

1. Please circle the key functions of the State Coordinator in the Master Gardener program:
   Long range planning
   Developing educational materials
   Promoting state level programs
   Liaison between state specialists and counties
   Expanding use of information technology'
   Developing progress reports / impact statements
   Other / please specify

2.a How many Master Gardener volunteers were trained in your state last year?

2.b. And how many of these volunteers have been in the program for over 5 years?

2.c. How many hours of training are required for a new volunteer to become certified Master Gardener?

   Less than 20___; 21 - 30 ___; 31 - 40 ___ over 40 ___

2.d. How many service hours are required of a new volunteer?

   Less than 20___; 21 - 30 ___; 31 - 40 ___ over 40 ___

3. Who administers the MG program (recruitment, training, record-keeping...) at the county level? *

   state funded agent: ___ county funded agent: ___
   county funded coordinator ___ volunteers themselves: ___ or: ___

4. Who provides the majority of the training?*

   state faculty: ___ county agents: ___ volunteers themselves ___
   other ___

5. How many Master Gardener programs have a waiting list?* ___

and how many Master Gardener programs screen potential volunteers?* ___

6. What annual training fees does a volunteer pay - if any? ___

7. How far does volunteer fund-raising meet the direct costs of training + service activities at the local level (i.e. excluding state level costs)?*

B. Volunteer Service

1. Who designs volunteer service activities at the county level?*

state coordinator: ___ county agent: ___ county funded coordinator: ___

volunteers themselves: ___ or: ___

3. If you had a magic wand, what projects/s would your Master Gardeners focus on? - up to three

4. What are the main benefits and challenges with MG Volunteers? - up to three

5. Please tell us about the (three?) most successful projects for Master Gardeners in your state. Either select projects from this table or add others as needed

Project Description	New Project? (Less than 3 years old)	How many volunteers involved?	How many clients served?
Answering gardening questions by phone in county office			
Plant diagnostic clinics (in libraries, garden centers...)			

Teaching gardening skills in schools, local communities, jails..			
Presentations to garden clubs, civic groups...			
Booths and displays at community gatherings			
Horticultural therapy			
Maintenance of community gardens...			
Media-based projects, e.g. articles in newspapers and magazines			

* please give percentage estimates for your state

ENDNOTES

1. *HortTechnology*, volumes 5(2) and 7(4)

   Directory of Master Gardener Programs in the United States and Canada. Master Gardeners International, Falls Church, VA, 1991 and 1996.

2. "Urban and Agricultural Communities: Opportunities for Common Ground." Council for Agricultural Science and Technology. Task Force Report #138, May 2002, page 64.

3. According to the most recent survey by the National Gardening Association (http://www.garden.org/RSRCH/feature.asp) 8 out of 10 U.S. households (84 million) participated in one or more types of do-it-yourself indoor and outdoor lawn and garden activities in 2003, which translates into just under $40 billion of products and services.

4. The author would like to thank Dr. Claude Bennett, then National Program Leader in the Cooperative State Research, Education, and Extension Service for his thorough and detailed advice.

5. A recent report on a survey by the Independent Sector, "Giving and Volunteering in the United States", 10/28/2002 shows that between 1987 and 1998, the number of U.S. volunteers rose sharply from 80 million to 109.4 million. At the same time the total number of hours volunteered barely increased, from 19.6 billion to 19.9 billion.

6. Ref Connie Pirtle, VolunteerToday.com (http://www.volunteertoday.com/), November 2000.

7. High training and administrative costs are inevitable, given the nature of Master Gardener programs. Management components include: attracting, processing, often screening applicants; development of curriculum and training materials; cost of training facilities and instructors time; design of outreach projects; placement, training and oversight of volunteers in these projects; record keeping; fund raising; social events. These actions necessarily demand substantial resources .

8. Meyer, M.H., A.M. Hanchek. "Master Gardener Training Costs and Payback in Volunteer Hours,"*HortTechnology*, October-December 1997, volume 7 (4). The study did not include the heavy costs of on-going administration, such as volunteer recruitment, record keeping, project design and supervision.

9. Ref. Connie Pirtle, VolunteerToday.com (http://www.volunteertoday.com/), February 2002.

10. Ruppert, K.C., J. Bradshaw, A.Z. Stewart. "The Florida Master Gardener Program: History, Use, and Trends," *HortTechnology*, October-December 1997, volume 7 (4).

11. C.R. Finch,. "Profile of an Active Master Gardener Chapter," *HortTechnology*, October-December 1997, volume 7 (4).

12. This issue relates to the larger question of Extension's role in providing urban / suburban services, which is beyond the current report.

13. "Programming for Impact (http://www.seniorcorps.org/research/pfi.html) is a means to put the service of Senior Corps volunteers in a broader context because it lays out five interrelated elements:

Community need: What needs attention
Service activities: What the volunteers will do to meet the need
Inputs: Level of effort and investment of volunteers and other resources
Accomplishments: Measurable and shorter term gains attributable to the volunteers
Impact: Measurable and longer term changes in the community"