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# Washington State's Master Gardener Program: 30 years of leadership in university-sponsored, volunteer-coordinated, sustainable community horticulture

Linda Chalker-Scott <sup>a,\*</sup>, Sharon J. Collman <sup>b</sup>

<sup>a</sup> Washington State University Puyallup Research and Extension Center, 7612 Pioneer Way E., Puyallup, WA 98371, USA

<sup>b</sup> US EPA, Region 10, 1200 Sixth Avenue, Seattle, WA 98101, USA

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## Abstract

The Master Gardener (MG) program, found throughout the United States and Canada, originated in Washington State to provide high-quality, research-based, educational programming to the gardening public. Washington State MGs are trained by Washington State University (WSU) faculty and other specialists in applied plant and soil sciences. After completing this intensive program, MG trainees must pass subject matter exams and then begin their volunteer activities.

Today, over 4000 active WSU MG volunteers provide horticultural assistance to their communities. While MGs increase their scientific knowledge, they also develop communication, management, and leadership skills. With sufficient support from local educational institutions and government, this program can easily be adapted to any community in any country where environmental sustainability is desired.

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## 1. Introduction to Washington State University's Master Gardener Program

The Washington State University (WSU) MG Program originated in Washington State 33 years ago to assist WSU Extension faculty in delivering applied plant and soil science information to individuals, communities, and horticulture professionals. WSU MGs evolved from WSU Extension's Community Horticulture Program, whose mission was to promote human well-being, protect and enhance the environment, and foster community stewardship. Trained and certified WSU MG volunteers provide educational programs, help identify plants, insects, and diseases, and provide answers to questions on home gardening and landscape maintenance, pest management, composting, and related topics. This is accomplished through various formal and informal activities, including plant

clinics, classroom instruction, telephone and personal contacts, newspaper articles, classes for garden clubs, civic and environmental groups, written material, demonstration gardens, public meetings, and tours. WSU MGs are trained, supervised, and supported by both county and state Extension faculty and staff.

Using a rigorous, scientifically based curriculum, the WSU MG Program provides university-trained volunteers with expertise in subjects such as plant biology, soil science, plant disease and disorder diagnosis, and integrated pest management. Each MG receives at least 50 h of training and returns a minimum of 40 h of free public service in horticultural assistance to his or her community. In 2004, WSU MGs volunteered 235,429 h and helped over 350,000 citizens with their gardening problems; their volunteer time alone was valued at \$4.1 million. Operating in most of Washington State's 39 counties, MGs staff plant clinics in 105 communities at 167 locations.

The WSU MG Program has the distinction of being the first MG program established in the USA and in 2003 celebrated their 30-year anniversary. In recognition of this milestone,

\* Corresponding author.

E-mail address: [lindacs@wsu.edu](mailto:lindacs@wsu.edu) (L. Chalker-Scott).

several of the original developers of the program authored a brief history of WSU's MGs [1]. Until recently, few official records were kept on the program and its activities, so many of the historical details are unfortunately lost.

### 1.1. Origins of program

The Western Cascade region of the Pacific Northwest in the USA is governed by a mild marine climate, which allows urban and rural dwellers to grow plants year round. WSU Extension traditionally assigned horticulture faculty to county offices as part of the Agriculture, Home Economics and 4-H outreach education programs mandated by all land-grant institutions. While the original emphasis of the horticultural programs was crop production, rapid urban growth and the corresponding increase in home gardens demanded that WSU Extension develop programs emphasizing on urban horticulture.

In the United States, the late 1960s were a time of increased interest in environmental issues, culminating with the proclamation of Earth Day in 1970. For urban dwellers, this interest was especially manifested in growing house and garden plants. In 1971, the two WSU Extension Agents in the largest metropolitan counties in the state found public demand for horticultural information so intense that it made educational programming virtually impossible. Utilizing mass media (i.e. radio and television) only served to make the public more aware of the presence of Extension offices, and demand for educational programs continued to escalate. After further discussion, the Extension Agents devised the concept of training volunteers to serve the growing urban audience. This proactive approach in fulfilling educational demands required a careful selection and training process. An appropriate and distinguished title would also be necessary to both attract and recognize these trained volunteers. Both Extension Agents had worked in Germany and knew that professional training programs there denoted "Gartenmeister" as the top proficiency level in horticulture. They anglicized this title to "Master Gardener".

To test the viability of the MG concept, a trial clinic was organized at a local shopping mall featuring horticultural education specialists. The event, which was publicized in popular gardening magazines and local newspapers, generated far more public interest than the organizers predicted. There were about 600 initial applicants interviewed by Extension Agents and approximately 200 were accepted for training.

### 1.2. Development and delivery of curriculum

WSU Extension faculty (Specialists and Agents) developed an educational curriculum for volunteer training. Originally, the subject matter included culture of ornamental plants, lawns, vegetables and fruits; control of plant diseases, insects and weeds; and safe use of pesticides, though other topics have been added over time. Training sessions were delivered by WSU faculty specialists 8 h per day, 1 day a week, for 5 weeks. At the end of basic training, volunteers were required to pass subject matter exams. In return for their basic training, MGs were then committed to volunteering at least 50 h of community

service through work with the gardening public. Many of the volunteer hours were and continue to be dedicated to staffing county MG plant clinics, where the public can bring plant samples for taxonomic identification, disease and disorder diagnoses, and pest identification. These regularly scheduled Plant Clinics are one of the most visible manifestations of the MG programs and are held not only at county Extension offices, but also in other public and commercial buildings and at public events such as county fairs and plant shows as well.

### 1.3. Statewide expansion of program

With increasing success and visibility of the fledgling MGs program came increased needs for staffing and support. Each county was assigned a program assistant who worked with volunteers and regional staff, most especially with the plant clinics. As needs quickly outpaced WSU funding ability, MG non-profit organizations were created in each county to raise additional funds. WSU faculty and staff continued to support other counties interested in developing their own MG program.

Central coordination of the expanding WSU MG Program became a priority to enhance cooperation among the counties. A statewide Program Coordinator position was funded by WSU to promote the program both state- and nationwide and to pursue outside funding opportunities. Most recently, a faculty Extension Horticulturist has been hired to update the training curriculum and to standardize basic and advanced training program criteria.

## 2. Case studies of WSU Master Gardeners providing leadership in environmental sustainability

Initially, the goal of the WSU MG Program was to assist county plant clinics by providing volunteers who would diagnose plant problems and offer solutions [2]. In time, the original focus broadened to include volunteer-delivered educational seminars and projects designed to involve diverse segments of local communities in science-based horticulture. Today, the WSU MG Program is not only relevant to sustaining healthy home landscapes but reaches beyond private property to the management of public landscapes including parks, urban forests, wetlands, fish-bearing rivers and lakes, and other ecologically important systems. Restoration and conservation of species and systems are addressed using the most recently available information in the applied plant and soil sciences. MG volunteers have effectively collaborated with their local communities in addressing water resource issues, sustainable gardening practices, and youth and adult education. Increasingly, MG volunteers are becoming involved in urban landscape management as presented at the 2002 EMSU conference [3,4].

### 2.1. Case study #1: Low-water use landscape demonstration

In 2003, a group of seven MG volunteers in Benton County designed and planted a water-conserving demonstration landscape in front of the county Extension office. By using drought-tolerant native and non-native plants, particularly those that

require limited maintenance and also provide color and interest in the landscape, the MGs' goal was to demonstrate that low-water usage landscapes could be both attractive and functional.

Partial funding was secured from local conservation districts, and MG volunteers solicited donations of plants and other materials. County maintenance staff cooperated with the project by removing existing plant materials, allowing MG volunteers to prepare the soil and install new plantings. MG volunteers also installed a drip irrigation system and are preparing educational signage and brochures as well as a recommended plant list.

### *2.2. Case study #2: Hood canal wetlands project – native plant demonstration garden*

The Hood Canal Wetlands Project is located in a more rural area of Washington State. The project site consists of 183 acres and has two areas dedicated to community education: a managed native plant landscape and a natural wetland. The 2-acre native landscape was designed and installed by MG volunteers and an intern from a local college. Mason County MG volunteers continue to remove invasive weeds and install additional plantings, so that over 800 specimens are now on site. This portion of the project surrounds the community center and serves to educate the public about selecting and managing native wetland plants.

The natural wetland is accessed by a trail located behind the community center. A 2-mile trail system is marked by a gate and "Nature Trail" signage and extends on raised boardwalks through natural forest and wetlands. Both the wetlands and the native garden are increasingly used for educational activities for children and adults throughout the year. In 1993, 8000 people visited the site and by 2000 it is estimated that 200,000 people visited the project. Not only is the area of interest to plant lovers, but to bird- and bat-watchers as well.

### *2.3. Case study #3: Raab Park community garden*

The Raab Park community gardens consist of several components, all of which are designed, installed, and maintained by Kitsap County MG volunteers and other community members. A 50-plot section of the garden allows adults, youth and MGs to grow flowers and produce in a communal setting. The Youth Garden includes a 10,000 square foot children's garden planned, planted and tended by youth. A significant amount of effort is provided by teenagers from a community school who grow vegetables for a local food bank and also assist with the youth activities throughout the year. The garden area also holds the county's largest home-gardening compost demonstration site.

An important part of this community garden project is continuing education provided by the county and MG volunteers. Educational offerings, including classes on vegetable gardening and compost production, are held during the growing season.

### *2.4. Case study #4: Community nutrition and garden education I – working with lower income families*

Environmental sustainability must include sustaining the health and well-being of human populations. Approximately

10% of Washington State's citizens are living below poverty level; 85% of these people use local food banks. We are particularly concerned with the documented impact of hunger on children's health, which includes unhealthy weight loss, fatigue, ear infections, frequent colds, headaches, and increased school absences. Food gardens can help address the problem of malnutrition. People can grow fruit and vegetable gardens fairly easily in western Washington once they acquire the basic skills. The fresh produce they grow is nutritious, generally expensive to purchase, and seldom available at food banks.

MG volunteers in Snohomish County have helped lower income families develop low-cost, effective gardening skills through classes and workshops on food gardening. Volunteers also maintain vegetable demonstration gardens, donating the produce to local emergency feeding networks. The county provides further instruction through fact sheets and bulletins and works with other agencies to obtain seeds, transplants, fertilizer, greenhouse space, and garden space for needy families and for the demonstration gardens.

### *2.5. Case study #5: Community nutrition and garden education II – working with native tribes*

The community nutrition and garden education program in Snohomish County has also been extended to include the Tulalip Tribes, of whom 81% are receiving food assistance from the government. After signing a treaty with the US government, the Tulalip Tribes were forced to change their lifestyle from one that included widespread hunting and gathering to a more sedentary lifestyle necessitated by reservation boundaries. This change in lifestyle has increased health risks for tribes nationwide, and 50% of all Native Americans over 45 have been diagnosed with diabetes. A diet deficient in fruits and vegetables increases the risk of diabetes as well as other chronic diseases. These diseases can be partially controlled by increasing consumption of fruits and vegetables.

Using the resources outlined in the previous case study, MG volunteers work with Tulalip Tribe members to develop a culturally appropriate food gardening education program. In addition to acquiring self-sufficiency gardening skills, participants increase their physical activity through hands-on experiences including soil preparation, planting, cultivation, and harvesting. The MGs have been particularly effective in working with tribal youth, which may help them establish healthy lifestyle practices that reflect their cultural heritage.

### *2.6. Case study #6: Gardening with juvenile offenders*

Clark County MG volunteers have collaborated with the Juvenile Justice Court and 4-H (a WSU program for youth) to develop the Restorative Community Service Garden through working with selected youth offenders. As a way to provide partial restitution to their community, these youth offenders cultivate a food garden located next to the County Extension office. MG volunteers assist the youth in developing gardening skills and together they donate thousands of pounds of produce to the local food bank.

Nearly all (99%) of the MG volunteers indicated that young offenders make a meaningful contribution to their community projects, and agreed with the goal of integrating youth in positive ways into the community while holding them responsible for their offenses. The success of this program can serve as a model for other community members or groups that could involve young offenders as volunteers in their projects.

### 2.7. Case study #7: Gardening with developmentally disabled adults

WSU Extension in Cowlitz County is cooperating with the Cowlitz River Club (CRC), a therapeutic group for developmentally disabled adults, in providing quality educational activities for these special needs citizens. MG volunteers train CRC members in practical gardening techniques, including seed sowing, cultivating, weeding, and watering. At harvest time, members integrated the fresh produce into their diets, while surplus produce was donated to a local food bank.

In addition to gaining gardening knowledge, participants raised their levels of self-esteem and self-reliance improved through the experience of gardening. Comments from participants included the acknowledgment of the benefits of adding fresh produce to supplement their diets. Others interacted socially in the gardening environment where they felt more comfortable. WSU Extension and the MGs are recognized as partners in helping Cowlitz County residents become more self-sufficient through increased knowledge and learned skills via hands-on demonstrations and training.

## 3. Benefits of Master Gardener programs

The case studies described above outline many of the educational, environmental and social benefits that MG programs can bring to their communities. In Washington State, these demonstration gardens have ranged in size from about 18 m<sup>2</sup> to over 1 ha and represent many landscapes, from food production to landfill restoration to sensory experiences for the blind. Over 90% of the county programs in Washington State are involved in youth education, providing this impressionable demographic with positive environmental and societal values.

MG volunteers themselves gain substantial improvements in their personal lives. A 1981 survey of WSU MGs reported that volunteers experienced improvements in self-worth, confidence, and decision-making abilities [2]. In addition to these enhancements, similar surveys of Texas State [5] and Missouri State [6] MG volunteers reported significant improvements in physical and social activity, nutrition, and career-related skills.

Finally, the economic benefits of MG programs cannot be overstated. Table 1 lists the economic benefits of the Washington State Master Gardener Program [2,7]. The obvious and documentable benefits of MG programs have led to their adoption in all 50 states and internationally. There is no doubt that potential MG volunteers could be found in every country and throughout diverse populations. While the predominant demographic of MG volunteers has historically been urban retirees or homemakers, this trend is shifting. An Oregon State MG

survey conducted in 2001 found that Oregon MGs are younger, joining the program with more college education, live further from cities and towns, and are more often employed compared to MGs surveyed in 1992 [8]. MGs can effectively serve even remote areas; sparsely populated rural counties in Washington and other states have successfully developed multi-county approaches to conserve resources and streamline program management.

## 4. Applicability of WSU Master Gardener Program to other countries

### 4.1. Resources for establishing new Master Gardener programs

Much of the information needed to develop an MG-type program in any country can be found at WSU's official MG website [9]. Among other documents available on this site is the MG Volunteer Handbook, which covers program organization and structure as well as guidelines, procedures and policies. This resource can be used as general guidelines for volunteers as well as local program coordinators to help develop and implement a successful program. It is extremely important to train the local program coordinators well, so this handbook includes administrative chapters on such topics as risk management and volunteer development and management.

The WSU MG *Sustainable Landscapes and Gardens Handbook* is also available and contains the basic training curriculum for the program. In addition to its intended use as the basic training curriculum for MG trainees, the handbook is also used for education in the Washington State nursery and landscape industry as part of their certified professional horticulturalist program. Both hard copy and electronic versions of this handbook will be available in 2006 for use by any interested university organization.

The Internet is an increasingly important way to disseminate horticultural information, both for and by MG volunteers. Centralized expert advice is offered on the web by WSU faculty and staff. The rapid response possible through web-based advice services makes these web sites extremely popular not only among MG volunteers but throughout the gardening community locally, statewide, and nationally. Though not all MGs use the Internet, those who do make use of online resources report a greater sense of connection to MGs both within their own program and those in other counties.

Online instruction is critical for those counties with reduced abilities to offer classroom instruction (e.g. large, rural counties

Table 1  
Economic and other benefits of the Master Gardener programs from 1973 to 2004 at Washington State University

	1973	1995	2004
Active MG volunteers	~200	2904	4015
Number of clients	7000	314,000	>350,000
Total volunteer hours	NA	101,335	235,429
Dollar value of hours	NA	\$1,216,020	\$4,058,796

with fewer participants). Online educational modules need to be carefully constructed, however, to avoid excessive on-screen reading and to encourage interactive learning. A Minnesota State comparison of online learners with those taught in a traditional classroom found no difference in the horticultural knowledge base of these two MG groups. MG volunteers in the classroom setting valued face-to-face interactions, while online learners valued class time flexibility and lack of commuting [10].

#### 4.2. Characteristics of successful Master Gardeners

Sharon Collman, co-author of this article, was primarily responsible for implementing the first WSU MG Program in 1973. She continues to be involved with educating MG volunteers and through the last 30 years has observed thousands of MG trainees, some who have succeeded as active MG volunteers and others who have not. In comparing these two groups she has noted the attributes of the most successful MGs; these could perhaps be used in a self-screening tool for potential trainees.

##### *Attitudes towards science-based education and learning*

- Commitment to basic and advanced training program.
- Open-minded approach to continuing education of themselves as well as others.
- Willingness to provide science-based, unbiased information regardless of personal beliefs.

##### *Commitment to programmatic success*

- Active interest in, and enjoyment of, horticultural pursuits.
- Effective oral and/or written communicators.
- Willingness to follow WSU MG policies and procedures.

##### *Commitment to societal well-being*

- Desire to help others to help themselves.
- Enjoyment in working with people of all ages.
- Willingness to donate significant time to community education and service.
- Willingness to share educational information.

#### 4.3. Requirements for Master Gardener trainees

Generally, Washington State volunteers are recruited to become field educators in their own county. Volunteers pay a nominal fee to cover the costs of training, and each volunteer agrees to complete a minimum of 40 volunteer internship hours within a set period; many of these hours are spent as staffers in local plant clinics. Volunteers who successfully complete both the basic training and internship become Certified WSU MGs. To maintain active certification, volunteers must continue to donate a minimum of 25 h to projects approved by the county coordinators. Most counties also require a certain number of hours of advanced training (i.e. continuing education) on an annual basis.

In addition to their required time staffing plant clinics, MG volunteers also enjoy establishing projects working with diverse or underserved populations and in addressing serious

environmental concerns. The previously mentioned case studies are examples of both of these types of projects. Other state programs have used volunteers to help enhance the educational resources needed for volunteer training and public education. For instance, North Carolina State MG volunteers created a searchable/sortable electronic database using plant clinic data to identify patterns of plant disorders. They use this database to predict local disease and insect cycles, and to aid MGs in answering questions at the clinic and over the telephone [11].

## 5. Recommendations for developing and maintaining successful Master Gardener programs

Sharon Collman, drawing on her experience in administering a large county MG program in Washington State, has also devised some strategies to assist universities and local government partners in establishing healthy MG programs.

##### *Reliable support from university and government administrators is crucial*

- It is vital to sell the importance of and need for the program upward (i.e. to administrators and other funding bodies), not just outward. The public tends to be supportive of these types of programs, but most funding comes from governmental agencies – not the public.
- The demonstrated economic benefits from the WSU MG Program can be used effectively to argue for creation of programs elsewhere.
- Volunteers do not decrease the workload, but magnify work output. In other words, implementing such a program will not lessen the work of university faculty and staff, but will increase the success and scope of outreach education.
- Program administrators must hire well-qualified program assistants, provide them with resources and guidance, and then let them do their job.

##### *Master Gardener volunteers need to be treated respectfully and considerately*

- Volunteers are of critical importance in this program. Therefore, training, support and nurturing of volunteers is paramount in maintaining a strong, successful program. When services to volunteers are reduced, volunteer retention suffers as does the quality of the program. In this program, volunteers are the audience for university Extension faculty and staff.
- Studies have demonstrated that most people prefer to get information from people like themselves. In other words, MGs are not only effective in their more formal educational environments, but will reach an informal audience of relatives, neighbors, and friends as well.
- Fit volunteer skills to volunteer tasks – a poor verbal communicator may be a great grant writer or supply person.

##### *Multiple teaching techniques need to be used to reach diverse audiences*

- Teaching techniques need to fit the volunteer audience, especially in countries where people traditionally learn by

observing and doing rather than sitting passively in a classroom.

- Hands-on training using research-based information is highly effective in public education and behavior modification.
- Demonstration gardens and other public landscapes allow people to see and evaluate new techniques that may be useful in their lives or communities.

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