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## **Online Initial Training Strengthens Master Gardener Program**

### **Abstract**

An online training was developed to provide more accessible opportunities for participants interested in becoming Master Gardener Volunteers. The long-term training goal was to increase statewide program participation. The training was developed by the State MG Coordinator, with assistance from MSU Extension specialists. Participants viewed 40 hours of pre-recorded videos asynchronously and passed a final exam to complete the training. The program succeeded, with 431 participants completing the training and rating all aspects positively. They increased overall knowledge in home horticulture, were confident to answer garden questions, were confident to teach others recommended gardening practices, and would recommend this program.

### **Introduction**

The Mississippi Master Gardener (MG) Volunteer Program certified its' first participants in 1992. It has now grown into a successful program with over 1,200 active MGs. The MG program significantly contributes to Mississippi State University (MSU) Extension's ability to meet ever-growing consumer horticulture needs. MGs assist extension agents and specialists in reaching clientele through numerous activities such as garden demonstrations, teaching efficient horticulture practices, promoting the Mississippi

Green Industry, and using horticulture to encourage gardeners to have more active, healthier lifestyles.

MG assistance is essential for MSU Extension to achieve its mission of providing research-based educational programs and information to improve the economic, social, and cultural well-being of all Mississippians. In 2022, more than 800 MGs reported 71,000 volunteer hours with a value to MSU Extension of \$1.8 million and a full-time equivalent of 34 employees (Wilson, 2022). Program impacts were determined through an in-house reporting system, allowing the State Coordinator and Extension Administration to plan future programs and projects to properly maximize benefits. Further, the data helps provide detailed reports for state legislators.

For 20 years (1992 to 2011), the Mississippi MG training was offered solely in a face-to-face setting, with specialists traveling to county extension offices to teach individual modules. The next five years (2012 to 2016), it was offered face-to-face or through an internally controlled video system and was then offered through Zoom from 2017 to 2020. Studies have shown that online educational opportunities can save MGs time and money by not driving to a local extension office to receive education (Allred and Smallidge, 2010; Wilson, 2023). Web-based program delivery has also been deemed efficient in reaching clientele while providing similar benefits to in-person education (Allred and Smallidge, 2010). Therefore, the initial MG training was updated and offered online in the spring of 2021, with spring and fall sessions offered in each year of 2021 and 2022.

## **Methods**

Mississippi MG course participants are required to take 40 hours of classroom or online instruction to complete the initial training. Online classes were taught using Canvas LMS (Instructure, Salt Lake City, UT). Set modules that make up the 40 hours are introduction, botany, soils, urban trees, honeybee care, propagation, weeds, ornamentals, lawns, entomology, diseases, fruits and nuts, vegetables, MGs as educators, and reporting hours.

The state MG Coordinator developed the new online curriculum with assistance from MSU Extension specialists. Each of the 15 modules was updated before being recorded and archived online. Modules were delivered asynchronously through pre-recorded presentations. Course advertisement was through social media, newspapers, promoted through all county extension offices statewide, and shared through personal communications.

Participants registered and paid the \$125 course fee online. Course materials were mailed from campus to each corresponding county extension office. Registration information was provided to each county extension office, and extension staff gave participants a specific day and time to pick up course materials from the county office. Course materials included a manual with copies of all slides with room for notetaking, a thumb drive with all slides in color, and all corresponding extension publications.

Once the online course opened, participants proceeded at their own pace. The course was open for nine weeks with a closing date clearly stated. Participants were required to watch all 15 modules in order, score at least 70% correct answers on the 134-question final exam, and then complete an evaluation before printing the course completion certificate. Certificates were then given to local county agents for verification.

Course participants (now MG Interns) volunteered with county MG groups to meet the required 40 volunteer work hours for certification. Once completed and reported, permanent name badges and certificates were given to the now Certified MG Volunteers. Every year following, MGs are required to obtain a minimum of 20 service hours and 12 education hours to maintain an 'active' status.

An evaluation of the MS Master Gardener Volunteer Training was developed by the State MG Coordinator and was approved by evaluation specialists at MSU. Portions of the evaluation were based on previous work by Swackhamer and Kiernan (2005). The evaluation quantified student satisfaction and self-perceived knowledge gained. It consisted of five statements regarding knowledge and confidence levels upon completing the training, one statement rating overall training quality, and confidence

levels of each module taught before and after the training. The first five statements were rated on a scale of Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. Those statements were: I increased my overall knowledge of home horticulture; I am confident in my ability to answer garden questions; I am confident in my ability to teach others recommended home gardening practices; I increased my knowledge of the purpose of the MG program; and I would recommend this program to others. Confidence levels for each module before and after the training were rated on a scale of Not Too Confident, Somewhat Confident, Moderately Confident, Very Confident, and Extremely Confident.

## Results

During the first two years, 532 participants took the online training, with 431 completing it, for an 81.0% completion rate. Consistent with completion rates observed in other states (Langellotto-Rhodaback, 2010). Average participant age was 56 years, compared to the average current Mississippi MGs age of 67 years (Jacobs, 2018). Twenty-seven percent of participants were under age 50, and 49% were under age 60 (Table 1). Demographic data in Mississippi was not obtained during previous years' training, but these participants are noticeably younger.

Table 1. Age demographics of online course participants.

Age Range	Total Completed	Percent of Total Completed
20-29	17	4
30-39	40	9
40-49	61	14
50-59	96	22
60-69	164	38
70-79	42	10
80-89	1	0.2
Unidentified	10	2.3
Totals	431	100

Eighty-one percent of those who completed the training were white/Caucasian, compared to the overall Mississippi MG total of 94% white/Caucasian in 2018 (Jacobs, 2018) (Table 2).

Table 2. Demographics of online courses.

<b>Race</b>	<b>Total Completed</b>	<b>Percent</b>
White	349	81
Black	42	10
Am. Ind.	1	0.2
Asian	1	0.2
Other	10	2
Unidentified	28	7

Seventy-eight percent of those who completed the training were female, 14% male, and 8% unidentified. Consistent with demographics for Mississippi from 2018 (76% female) (Jacobs, 2018) but considerably lower than earlier data (85% female) (Wilson, 2009; Wilson and Newman, 2011). Of the 431 that completed the training, only 52% volunteered the required 40 hours to become certified MGs.

Evaluation summaries from all four trainings were combined and found that participants rated each aspect of the training positively. The rating scale was Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. The results indicated the participants increased overall knowledge in home horticulture, were confident in their ability to answer garden questions, were confident in their ability to teach others recommended practices, increased knowledge of the MG program purpose, and would recommend this program to others (Table 3).

Participants rated the overall quality of the training on a scale of 1 to 5, with 1 = Poor, 2 = Somewhat Poor, 3 = Good, 4 = Very Good, and 5 = Excellent. Eleven percent of participants rated the overall training quality as good, 38% as very good, and 49% rated it as excellent. 98% rated it as good, very good, or excellent.

Table 3. Evaluation summaries of all four trainings.

Question	% Agree or Strongly Agree	Means
Increased knowledge of home horticulture	96	4.6
Increased confidence in the ability to answer gardening questions	79	3.9
Confidence to teach others recommended home gardening practices	74	3.9
Increased knowledge level of the MG program	97	4.6
I would recommend the program to others	93	4.6

Fall 2022 participants rated confidence levels in their ability to field questions for each topic before (Figure 1) and after (Figure 2) the training. Choices were Not Too Confident, Somewhat Confident, Moderately Confident, Very Confident, and Extremely Confident. The average mean scores for confidence levels in answering questions increased from 1.88 to 3.39 from before training to after training, respectively. This was very similar to the results of the three previous trainings conducted.

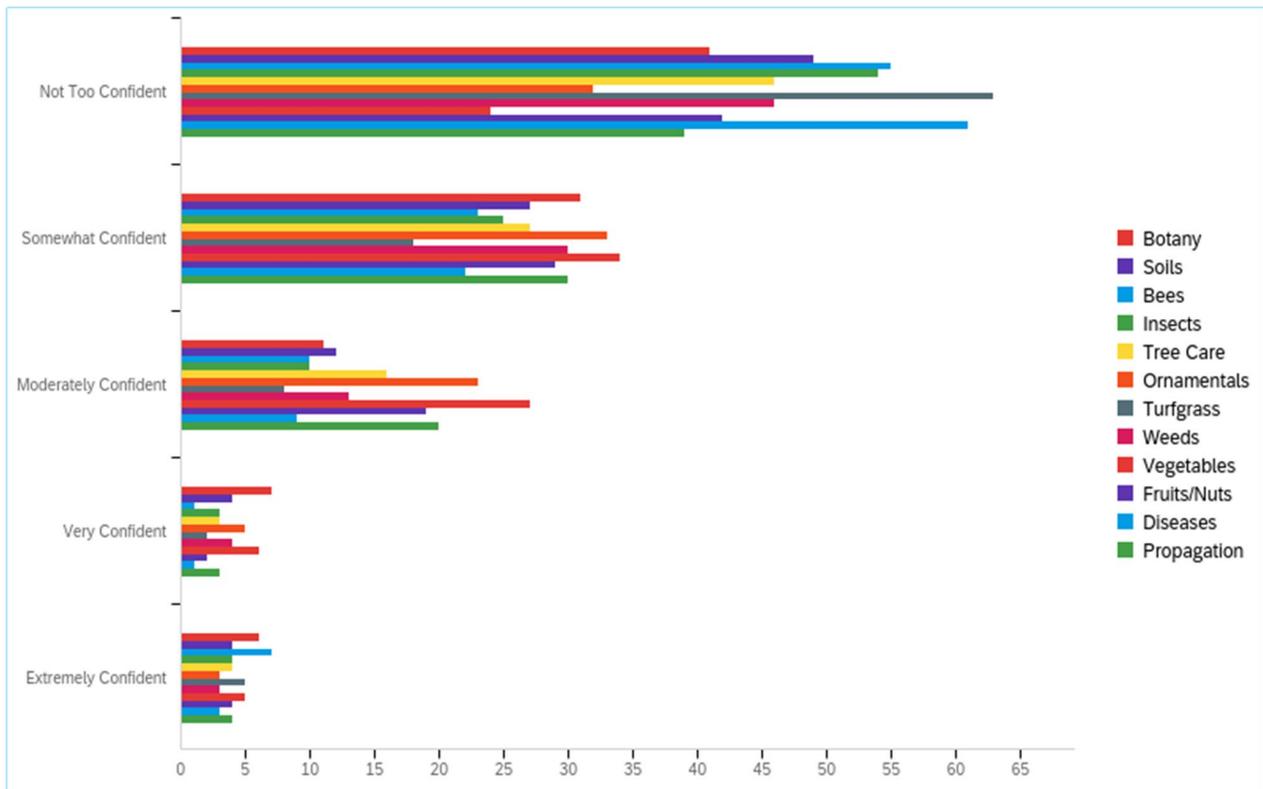


Figure 1. Confidence levels in the ability to field questions before training.

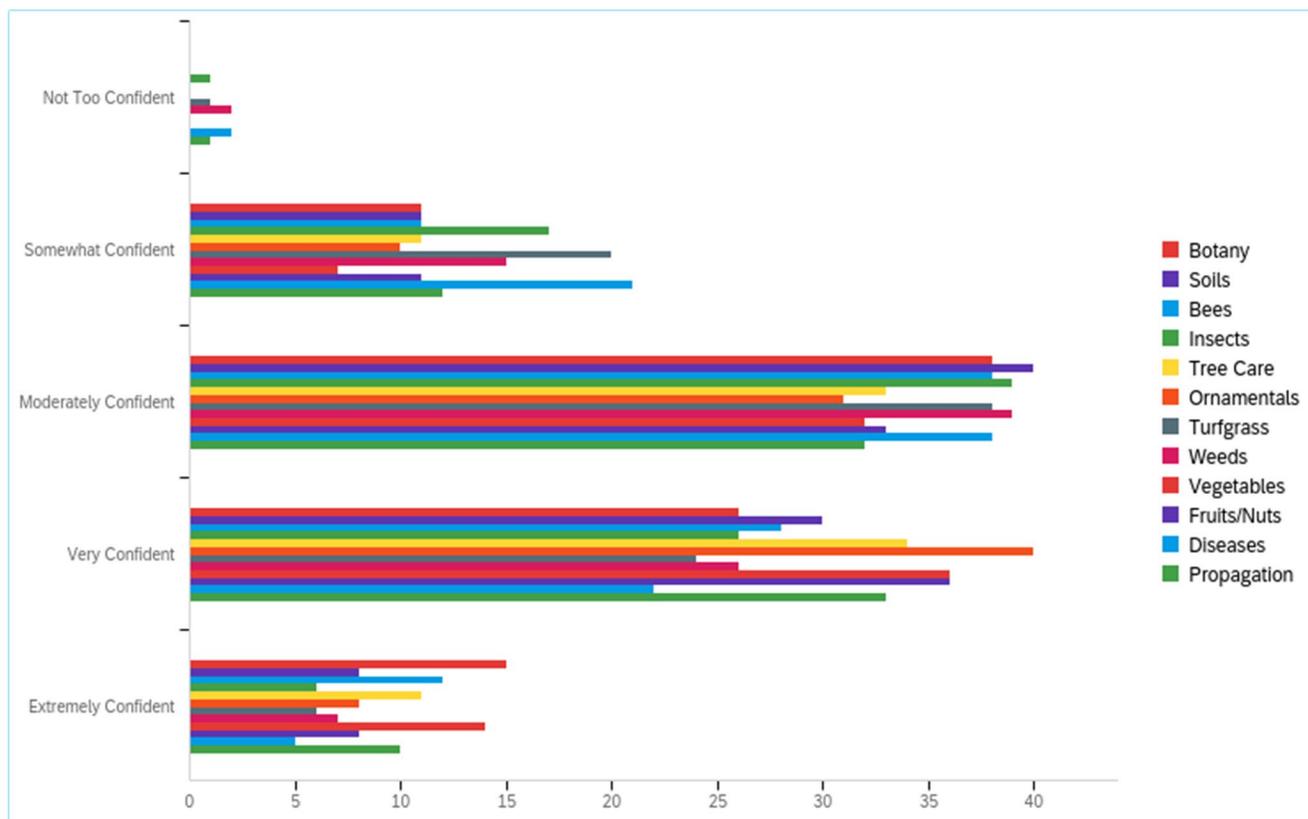


Figure 2. Confidence levels in ability to field questions after training.

Overall, the combined confidence levels to field questions in specific areas before the training were highest for the Ornamentals and Vegetables modules (Table 4). Likely due to many incoming participants' previous experience in these two areas. The lowest confidence levels were for the Diseases module, traditionally being the most challenging module in past trainings. Results were supported when looking at either Moderately Confident, Very Confident, and Extremely Confident or just Very Confident and Extremely Confident levels.

Overall, combined confidence levels to field questions in specific areas after the training were again highest for the Ornamentals and Vegetables modules (Table 5). The lowest confidence levels were again for the Diseases module, with the turfgrass module next to lowest. Results were supported when looking at either Moderately Confident, Very Confident, and Extremely Confident or just Very Confident and Extremely Confident levels.

Table 4. Confidence level percentages before training.

	<b><u>NTC</u></b>	<b><u>SC</u></b>	<b><u>MC</u></b>	<b><u>VC</u></b>	<b><u>EC</u></b>	<b><u>MC/VC/EC</u></b>	<b><u>VC/EC</u></b>
Botany	42	32.7	17.4	6	1.9	25.30%	7.90%
Soils	49	27.7	18	4.5	1.2	24.70%	5.70%
Bees	52.1	28.8	13.8	3.3	2.4	19.50%	5.70%
Insects	51	33.6	12.4	2.1	1	19.50%	3.10%
Tree Care	45	33.1	17.4	3.3	1.2	21.90%	4.50%
<b>Ornamentals</b>	30.2	32.6	27.1	8.8	1.2	<b>37.10%</b>	<b>10%</b>
Turfgrass	60	22.4	13.3	2.9	1.4	17.60%	4.30%
Weeds	42.8	35	17	4.6	0.7	22.30%	5.30%
<b>Vegetables</b>	23.7	32.3	32.3	9.8	1.9	<b>44.0%</b>	<b>11.70%</b>
Fruits/Nuts	40.9	34.1	19.7	3.9	1.4	25.0%	5.30%
<b>Diseases</b>	62.2	24.2	11.9	1	0.7	<b>13.60%</b>	<b>1.70%</b>
Propagation	44.6	28.4	20.6	4.4	2	27.0%	6.20%

NTC – Not Too Confident, SC – Somewhat Confident, MC - Moderately Confident, VC - Very Confident, and EC - Extremely Confident

Table 5. Confidence level percentages after training.

	<b><u>NTC</u></b>	<b><u>SC</u></b>	<b><u>MC</u></b>	<b><u>VC</u></b>	<b><u>EC</u></b>	<b><u>MC/VC/EC</u></b>	<b><u>VC/EC</u></b>
Botany	1	12	47.3	32.1	7.6	83.00%	39.80%
Soils	0.8	13	49	31.4	5.9	86.00%	37.30%
Bees	0.5	12.6	42.5	36.1	8.8	87.40%	44.90%
Insects	1.5	15.1	52.4	26.9	4.3	83.60%	31.30%
Tree Care	0.8	12	44.6	34.2	8.4	87.20%	42.60%
<b>Ornamentals</b>	1.3	8.7	46.5	38.8	10.8	<b>96.10%</b>	<b>49.6%</b>
<b>Turfgrass</b>	2.3	20.7	46.2	24.8	5.9	<b>76.90%</b>	<b>30.70%</b>
Weeds	2.3	15.1	48.1	31.5	5.6	85.20%	37.10%
<b>Vegetables</b>	0.5	8.2	34.5	41.9	14.8	<b>91.2%</b>	<b>56.70%</b>
Fruits/Nuts	0.8	12.9	44.1	34.5	7.7	83.3%	42.20%
<b>Diseases</b>	2.3	20.8	48.8	24.4	3.6	<b>78.80%</b>	<b>28.00%</b>
Propagation	1.5	13.3	45.4	31.3	8.5	85.2%	39.80%

NTC – Not Too Confident, SC – Somewhat Confident, MC - Moderately Confident, VC - Very Confident, and EC - Extremely Confident

Participant evaluations provided positive feedback that will be used to improve the course for future offerings. Some of these comments were:

- I did not realize I would learn this much! The materials and training were thorough.
- I enjoyed this course and have been talking about it at work and have enjoyed passing on information as I was learning it.
- Great course. Absolutely loved the instructors and their enthusiasm and knowledge.
- The instructors were very knowledgeable about their subject matter and provided great insights into the classes.
- My county Extension Worker and staff were very helpful in me getting through the course with their encouragement.
- I wish that instruction could be a combination of in-person as well as video.
- It should have been more interactive, like games and quizzes within the course.
- Would love to see some women instructors.
- I found the program to be very beneficial knowledge-wise; however, it will take more hands-on experience and study dealing with issues like disease/pest identification and control, to increase my confidence in answering questions.
- I would hesitate to recommend these classes to an older person who may be hard of hearing or not have access to higher-quality audio equipment to help them learn.
- Much more to learn. I can't wait for the hands-on learning with the volunteer portion.
- I look forward to learning more as I work with more experienced Master Gardeners.
- Follow-up advanced courses will be great.

## **Discussion**

The online format allowed participants to watch modules at times convenient to them and at their own pace. It also allowed participation for those who work during daytime hours when traditional in-person training is offered. Current MG groups have adjusted meeting schedules and volunteer opportunities to accommodate new MGs who work or have families. This hopefully helps to increase the social bonds within the group and will also be addressed in future research.

Course limitations included presentations being recorded and presenters not physically being in the same room with participants. This would be the preferred method of training

but does not allow the same reach as an online program. This also does not allow participants an opportunity to ask questions directly to the specialist presenting. Another limitation is that some participants did not have access to reliable internet services or were not familiar with how to navigate an online training. Participants were allowed to use the free internet provided at local extension offices and were provided with a contact number for a technology person at the university to assist with any issue.

Only 52% of participants became certified MGs. Some took the training only for educational information with no intention to volunteer. Others were too busy to complete the volunteer hours, while some are currently still working towards certification. This data has not been previously tracked. While this percentage seems low, there are no past results for comparison. This very interesting data will be closely followed going forward and will be reported in future research.

## **Conclusions**

Offering the initial training online has been a success for the Mississippi Master Gardener program. Eighty-one percent of participants completed the training. Training online has increased the number of males, minorities, and young people entering the program, enhancing diversity. These positive results are expected to continue with more online training opportunities and will be reported in future publications along with long-term retention rates of online participants.

Evaluation data provided a baseline for future evaluations and gives the state MG Coordinator confidence that the initial MG Volunteer training is increasing program participation. This information also allows Extension to make necessary changes to the training to keep it effective in properly educating MG Volunteers. Any state Extension program could use this online training model to determine its effectiveness and create a more diverse and impactful program.

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