WERA 1017 2019 Annual Report – Nevada

Reporting period 9-30-18 to 8-31-19

Goal 1.: Increase participants' skills, knowledge, and awareness of regional/national IPM issues, systems, and strategies (3 primary priorities and 3 secondary priorities).

IPM Implementation in Agronomic Crops (primary priority)

Accomplishments: Agricultural producers rely heavily on our program to inform them of the best practices to produce quality agricultural products with limited water and land resources in Nevada. Our goal is to ensure that producers in Nevada have access to the latest information to make the best decisions while producing viable yields. We reduce risk to our producers from crop lost and pesticide and herbicide resistance by training for chemical applications and training on IPM techniques that can reduce the use of pesticide or enhance production without increased use of pesticide.

- Four workshops occurred during this grant reporting period. This represents seven hours of time and 174 participants.

Outcomes and Impacts: Increased knowledge of IP principles and practices by attendees.

Publications Two publications have been peer reviewed and are awaiting final corrections and ADA compliance to be published and posted on our website.

IPM in Communities (primary priority)

Accomplishments: Our objectives are to improve IPM practices and to increase IPM adoption by private citizens, Extension Master Gardeners and Green Industry professionals in urban areas resulting in adoption of increasingly higher-level IPM strategies, consistent with the National IPM Roadmap goals. These strategies include greater use of preventative measures and sustainable use of appropriate pest management products to minimize nonpoint source pollution of Nevada waterways and protect the health of Nevada residents. Nevada is among the fastest growing states in the nation. The increasing number of residential and commercial landscapes is putting pressure on the water resources that service the urban population centers in the state. Training and educational resources are needed to assist all members of our audience to implement increasingly higher-level IPM strategies.

Basic certification for both Master Gardeners and Green Industry includes: IPM; pesticide safety; insect identification and management; plant diseases; sustainable turfgrass management and weed identification and management. For the grant period, this resulted in 18 hours of certification training for Green Industry (204 participants) and 10 hours of certification training for Master Gardeners (41 Master Gardeners). Green Industry Continuing Education Series offered 14 hours of training to 269 participants.

Four (4) bilingual landscaper trainings were offered: planting; pruning, pesticide safety and turf management; 54 participants attended the 12 hours of training.

Our statewide Grow Your Own, Nevada program was offered in the fall of 2018 and reached 265 people at 8 different sites throughout the state. Grow Your Own, Nevada Workshops in the spring of 2019

reached 483 people at 7 different sites throughout the state. For many Nevadans, this is the only horticulture and IPM-related information they receive.

Gardening in Nevada, the Bartley Ranch series, offered 8 classes in Reno to home gardeners; a total of 629 people attended the trainings. All classes discuss IPM in some fashion.

Our 2019 PSA media campaign consisted of 802 TV PSAs and 222 Radio PSAs. Both TV and Radio PSAs advertise our website, www.manageNVpests.info.

Weed Warrior training occurred in May 2019 had 64 participants in two counties. Our weed Warrior training is geared towards those people dealing with noxious weed control on both public and private land. It is attended by BLM and USFS personnel, County personnel, State and State Parks personnel, Nevada Department of Transportation workers, Ranchers, Farmers and Homeowners. The Nevada Department of Agriculture (NDA) is very supportive of this program and would like it to continue and grow.

A Nuisance weed field guide was developed in the last grant funding cycle: Hefner, M. and H. Kratsch. 2018. Nevada Nuisance Weed Field Guide. University of Nevada Cooperative Extension Special Publication SP-18-01. This field guide has been distributed to all University of Nevada Cooperative Extension offices in the state, the Nevada Department of Agriculture, the Nevada Division of Forestry and many weed management groups. During the reporting period, over 2900 field guides were distributed in Nevada.

Two IPM brochures were developed in the last funding cycle:

Hefner, M. and H. Kratsch. 2017. A Green Industry Professional's Guide to Integrated Pest Management (IPM). University of Nevada Cooperative Extension Special Publication SP-17-14. Previously reported as "in press." Now published. https://www.unce.unr.edu/publications/files/ho/2017/sp1714.pdf

Kratsch, H. and M. Hefner. 2017. A Homeowner's Guide to Integrated Pest Management (IPM). University of Nevada Cooperative Extension Special Publication SP-17-13. Previously reported as "in press." Now published.
https://www.unce.unr.edu/publications/files/ho/2017/sp1713.pdf

These two brochures are used in trainings to aid and augment IPM education for Homeowners, Master Gardeners and Green Industry workers.

Outcomes and Impacts: Green Industry Training participants were surveyed at the completion of the program. On a rating scale of 1 = not at all to 5 = yes very much, participants rated the program as
"current and up-to-date" (mean = 4.6). A mean rating of 4.65 was received for the question "Do you intend to use the information from this course?" Additionally, participants were asked to rate their perceived knowledge of the different topics presented before and after the presentations, from 1 = no understanding to 5 = thorough understanding. Mean increases in knowledge were greater than 1 rating scale point, or a perceived increase in knowledge of 20% or more.

Grow Your Own participants were surveyed regarding the program and the instructors. Mean ratings were 4.5 or greater, on a scale of 1 = poor to 5 = excellent. Additionally, participants are always asked about topics they would like to receive education on in the future, which helps with planning future programming.

Surveys were conducted with participants of the Gardening in Nevada series. Instructors were rated 4.3 or better on a scale of 1 = poor to 5 = excellent. Similarly, usefulness of material covered during class received a mean rating of 4.45 or greater on a scale of 1 = poor to 5 = excellent.

Weed Warrior participants were asked to rate the program from a scale of 1 (no, not at all, minimal) to 5 (yes, very much so, a lot) on instructor's knowledge (mean = 4.78), usefulness of the information presented (mean = 4.56) and if it was worth their time to attend (mean = 4.71). Participants were also asked to rate their perceived level of weed knowledge before the program (mean = 2.53) and after the program (mean = 3.97); this corresponds to a 1.44 perceived increase in knowledge. Participants were tested on weed identification of the 16 weeds covered both before and after the class; on average, participants were able to identify 6.24 more weeds after the program than before the program, which corresponds to a 39% increase in weed identification ability.

All programming and our PSA Media campaign directs people to our website, www.manageNVpests.info. For the grant reporting period, 9-1-18 to 8-31-19, the website received 566,114 total hits and 40,429 total visitors.

Publications: Eight bilingual fact sheets have been developed and are in the process of peer review. The expansion of the Weed Warriors curriculum is underway.

IPM for Pollinator Health (primary priority)

Accomplishments: Three urban sites were planted; a fourth site will be planted this fall. Each urban demonstration garden is approximately 300 ft^2 in area. One agricultural site has been established; the second will be planted in June 2019.

Three presentations (3.5 hours) occurred at the garden plots with 78 participants. Four presentations (6 hours) occurred at local conferences with 188 participants.

An initial set of 31 native plant species were purchased as seed and sown in February 2018; a total of 16 species germinated in numbers sufficient to transplant into demonstration gardens. Details for the individual garden soil conditions, planting details, and modifications are detailed below.

Urban Pollinator Protection Demonstration Plots:

- The Washoe County Extension Office Garden was planted in September 2018 with the help of Washoe County Master Gardeners. Soil consists of native soil and fill soil on the west side of the office building. Plants are drip-irrigated and soil is covered with a decomposed granite mulch. Transplant success was roughly 90%, and several species have bloomed as of May 2019.
- The Las Vegas Garden was planted in September 2018 with the help of the Montara Estates Landscaping Committee and community members. Soil consists of landscaping topsoil delivered on site. Plants are drip-irrigated, and soil is covered with a wood mulch. Transplant success was roughly 90%, and several species have bloomed as of March 2019. In March 2019, twelve replacement plants from the Nevada Division of Forestry Tree Nursery in Las Vegas were installed.
- The Overton Garden was planted in October 2018 and is located at the Lost City Museum. Soil consists of native topsoil amended with 4 ft^3 of vermiculite. Plants are drip-irrigated, and soil is covered with a wood mulch. Transplant success was roughly 80% as of March 2019. In March 2019, twenty replacement plants from the Nevada Division of Forestry Tree Nursery in Las Vegas were installed.The Elko County Extension Office Garden will be located in the courtyard of the Office. The site currently consists of raised beds that will be amended with compost and garden soil. This garden will be planted with species raised by the Nevada Division of Forestry Nursery in Washoe Valley in the fall of 2019.

Agricultural Pollinator Protection Demonstration Plots:

- In addition to the urban locations, two agricultural plots have been established. These plots represent different planting strategies and include three types of habitat: native habitat, agricultural habitat, and pollinator plantings.
- The Walker River State Recreation Area Plot is a 1/3-acre plot in an abandoned agricultural field near Yerington, NV. Soil is native topsoil with a history of disturbance due to years of nitrogen addition. A total of 30.5 ounces of seed of 12 species were mixed with sawdust at a rate of 2.5 ft^3 per 1000 ft^2 of coverage and spread by hand in December 2018. The plot has supplemental overhead irrigation during the springtime season, with amounts determined by local irrigation allotments. Adjacent to the plot are both native habitat and restoration plots with sunflowers.
- The Gardnerville Plot is located in Gardnerville, Nevada at the Jacobs Family Berry Farm. This 600 ft^2 plot consists of native topsoil amended with an additional 15 yards of garden soil. A total of approximately 110 seedlings of 12 species will be planted in June 2019. Plants will be drip-irrigated. The plot is adjacent to agricultural land for berry production and residential land with ornamental plant species.

Outcomes and Impacts: Dr. Kevin Burls and Dr. Heidi Kratsch were invited to present a poster, Bringing Pest Control to You: Using Native Flowering Species to Attract Beneficial Insects, at the American Society for Horticultural Science annual conference in Las Vegas July 2019.

IPM Implementation in Housing (secondary priority):

Accomplishments: Specific objectives: educational outreach events at six sites for professionals in areas of the state where bed bug infestation and spread is of most concern. In Nevada, this is primarily an urban issue. Workshops occurred at eight sites during the first year of the grant.

Outcomes and Impacts: None to report

Publications: none

IPM Education for Pesticide Applicators (secondary priority):

Accomplishments: Twenty-five (25) workshops with Certified Pesticide Applicator CEUs occurred during the grant reporting period. Seventy-seven (76) CEUs were offered and 1,295 people attended the workshops. Several workshops were offered statewide via interactive video.

Additional education resources can be found on our website, www.nevadapesticideeducation.info.

Outcomes and Impacts: Pesticide Safety Education Workshop, Aquatic Pesticide Safety was held live in Reno and Las Vegas, and via video to eight other sites throughout the state: provided six CEUs to 70 participants. Evaluation: On a scale of 4, excellent to 1, poor, participants average rating for the training was 3.39 and the average for instructors as 3.46.

Pesticide Safety Education Workshop, Cultivator Pesticide Safety was held live in Reno and Las Vegas, and via video to three other sites throughout the state: provided 6 CEUs, 76 participants. On a scale of 4, excellent to 1, poor, participants average rating for the training was 3.56 and the average for instructors as 3.68.

All trainings direct participants to our website, www.nevadapesticideeducation.info. Website hits for the grant reporting period are 233,935, with 34,203 visitors.

Publications: none

IPM on Recreational Lands (secondary priority):

Accomplishments: Two educational presentations were delivered to 105 participants.

Outcomes and Impacts: None to report

Publications: none

Goal 2: Increase relevance of federal and regional IPM RFA's, programs, and policies to better align them with regional stakeholder needs.

Accomplishments: N/A

Outcomes and Impacts:

N/A **Publications:** none

Goal 3: Enhance collaboration, sharing of ideas, and hence creation of regional outputs such as multi-state grants and shared outreach materials.

Accomplishments: Three multi-state webinars occurred during the reporting period.

- 4/2/2019: Canker Diseases on Landscape Hardwood Trees in the Western US, Marion Murray, Utah State University. Webinar was attended by 466 participants. The webinar can be found at https://www.youtube.com/watch?v=RLJStYCJNPY&feature=youtu.be
- 5/14/2019: Native Mycorrhizal Fungi and Whitebark Pine Restoration, Cathy Cripps, Montana State University. Webinar was attended by 294 participants. The webinar can be found at https://www.youtube.com/watch?v=JlHKCoaSBlw&feature=youtu.be
- 7/16/2019: Spotted Lantern Fly & Other Invasive Landscape Tree Pests, Dr. Lori Spears, Utah State University. Webinar was attended by 425 participants. The webinar can be found at https://youtu.be/Jnu7uWRrhPs

Outcomes and Impacts: Results of a survey given after the Canker Diseases on Landscape Hardwood Trees in the Western US webinar found that 65% of the participants strongly agreed or agreed with the statement "Overall I found this webinar useful and informative:" and 66% of participants strongly agreed or agreed with the statement "My knowledge on the webinar topic improved as a result of watching this presentation."

Results of a survey given after the Native Mycorrhizal Fungi and Whitebark Pine Restoration webinar found that 69% of the participants strongly agreed or agreed with the statement "Overall I found this webinar useful and informative:" and 70% of participants strongly agreed or agreed with the statement "My knowledge on the webinar topic improved as a result of watching this presentation."

Publications: none

Goal 4: Improve coordination of IPM programs that address on-going, emerging and other critical pest and related environmental issues.

Accomplishments: Melody Hefner attended the 2019 WERA1017 meeting in Richland, Washington.

Melody Hefner attended several webinars on IPM related subjects; in addition to the multi-state webinars mentioned previously, attended Dealing with the Triple Threat Invasion – Cheatgrass, Medusahead and Ventenata. (June 25, 2019, 3.75 hours, USU Forestry Extension and Southern Rockies Fire Science Network).

Dr. Heidi Kratsch attended four IPM National Stakeholder Workgroup meetings and one National Stakeholder Team for Pesticide Safety Education Program (PSEP) Funding meeting.

Nevada IPM team members (Dr. Heidi Kratsch, Melody Hefner, Dr. Kevin Burls) met monthly to coordinate activities. Meetings were also held as need with the Nevada Department of Agriculture for coordination of educational programs and content.

Outcomes and Impacts: Increased knowledge of IPM.

Publications: none