GROUNDED

A Quarterly publication of WSUE
Grant/Adams Master Gardeners

Newsletter June 2017
Volume 6 Number 2

Grant/Adams Counties Master Gardeners, 1525 E. Wheeler Road, Moses Lake, WA 98837
http://county.wsu.edu/grant-adams/Pages/default.aspx · ga.mgvolunteers@ad.wsu.edu

Busy MG Volunteers Hit 2017 Running

Governor Jay Inslee recently issued a proclamation designating May 21-27, 2017, Washington State University (WSU) Master Gardener (MG) Volunteer Week. In it, he recognized the program's 44 years of service to the citizens of the state, and declared it a model of volunteer service. The program was founded by WSU in 1973, and ". . . dedicated volunteer educators use their love of gardening to enhance natural resources and environmental stewardship, improve health and wellness of Washington residents, and create and sustain vibrant communities and urban neighborhoods." The Governor noted that in 2016, 3,315 MGs served more than 330,000 state residents, and this remarkable service returned to Washingtonians over 10 times the funds spent on the program's maintenance.

Locally, 23 Grant-Adams MG volunteers serve their communities. So far this year, they have lived up to the mission of the MG program.

During the first five months of this year, MG volunteers worked to ready for the season the Moses Lake Library drought-tolerant demonstration garden, the Ephrata community garden pollinator border, the Othello drought-tolerant garden, the Ephrata community giving garden, and the Soap Lake Healing Waters demonstration garden. These dedicated volunteers also served on committees planning parks, beautifying communities, and renovating municipality plantings. Their work entails thousands of hours.

Volunteers also educated over 600 local adults and over 400 children through hosting the third annual Columbia Basin Eco-Gardening Symposium in partnership with Grant County Conservation District, teaching numerous classes, making presentations, and answering questions at plant clinics and at the annual plant sale. Topics covered included:

- Seed Library
- Gardening Series
- Square Foot Gardening
- Winter Sowing
- Fairy Gardens
- Friend, Foe, or Escargot?
- Basic Principles of Drip Irrigation
- Planting a Container
- Drought-Tolerant Gardening
- Integrated Pest Management for Homeowners and Gardeners

INSIDE THIS ISSUE

Additional topics covered included:

Native Plant Gardening
Kids' Garden
Giving Garden Service
Seed Planting for Kids
Thriving Landscapes
Drought-Tolerant Gardening for 5th graders
Trees, Shrubs, Vines

MG volunteers also wrote, edited, and published the quarterly newsletter *Grounded*, which can be accessed at http://ext100.wsu.edu/grant-adams/gardening/master_gardeners/. In addition, they wrote gardening articles that were published weekly in four area newspapers.

From January through May 2017, MGs manned the WSUE office clinic (online and live) as well as the first few community plant clinics of the season, answering questions for over 100 local gardeners and homeowners. Thanks to all the Grant-Adams Master Gardener volunteers for service to the environment, their communities, and to over 1000 individuals.

If you or your group have questions or would like a presentation, use the email link at ga.mgvolunteers@ad.wsu.edu, check the website at grant-adams.wsu.edu, or contact Jeannie Kiehn at 754-2011, ext. 4313.

Plant Sale May 2017 . . . *By Mona Kaiser*

The WSU Grant-Adams Master Gardener plant sale is always a long process, involving months of preparation. WSU Master Gardeners began by sowing seed in the BBCC greenhouse and in their respective yards, and dividing and potting plants that were readied for customers by the sale day on the first Saturday in May.

It is only a short time from recovering from one year's plant sale and beginning planning for the next one. It's one of those events that allows Master Gardeners to show off their skills learned through the WSU Master Gardener program classes.

Overview of plant sale at the Moses Lake Farmers Market

Our group strives to offer a varied selection of plants for purchase. Our customers know they can find the common, everyday type of plant as well as plenty of unusual varieties that are difficult to find at the average plant nursery. Those specimens are fun to pass on to our fellow gardeners who frequent the annual plant sale.

This year's sale was a successful venture with our proceeds grossing more in 2017 than in 2016. In addition to direct plant sales, the Master Gardeners held a raffle at the end of the sale with seven prizes awarded:

Carol and George Roper staff plant tables

Raffle Item	Winner
Garden Convert-a-Bench	Ray and Terry Rice
Garden composter	Kenneth Meaney
WSU 10 x 10 canopy with wheeled carrying case	Jim Tabor
Handcrafted stepping stone and roll of organic weed-suppression fabric	Missy Belerl
$50 gift certificate donated by The Florist in the Garden	Pat Moore
Mystery Surprise	Janet Larson
Mystery Surprise basket donated by Winchester Winery, Camas Cove Winery, and Don Francisco Coffee Co.	Wendy Mason

Duane Pitts sits among tomato seedlings for sale

From proceeds of the plant sale and raffle, the Master Gardeners now have more funds to continue educating home gardeners as they contact us through plant clinics for help to improve their horticultural practices. MGs also give gardening presentations on a wide array of subjects and assist schools with horticultural programs geared to their needs. The list of ways MGs can help the gardener work out gardening dilemmas is ever changing and ever growing.

Barbara Guilland (blue hat right foreground) helps prospective buyer

The Grant-Adams Master Gardeners thank all of you who supported our plant sale through your purchases, plant donations, loaned tables, and helped in setup/take down. Even though the plant sale process is exhausting, it is so rewarding when the funds collected allow us to put energy right back into the community. Besides, it is rewarding to work side by side at the sale and at the greenhouse with our fellow Master Gardeners. The year-long fundraiser to support the MG program is the sale of Atlas garden gloves. Gloves can be purchased at the ARTGARDEN in Moses Lake, WSU Extension, and the Moses Lake Farmers Market. Our group welcomes others to join our Grant-Adams Master Gardeners. The next certification classes offered by WSU are scheduled to begin the fall of 2017 in Moses Lake.

Annual Gardening Symposium Rated a Great Success

The 3rd Annual Columbia Basin Eco-Gardening Symposium took place on Earth Day April 22, 2017, with 96 attending the free event at the Moses Lake Technical Skills Center that focused on vegetable gardening. Professors from the University of Idaho and Wenatchee Valley College and professionals from the Tri-Cities and Othello spoke on integrated pest management, square-foot gardening and drip irrigation. Grant-Adams Master Gardener Kris Nesse served as the Master of Ceremony. Surveys turned in after the event from those attending raved not only about the presentations but also about the food, facility, door prizes, and vendor marketplace.

The event would not have been as successful without the cooperation and organization provided by the joint efforts of Grant-Adams Master Gardeners and Grant County Conservation District. Set your calendars for next year's 4th annual event, which will be held on Saturday, April 21, 2018.

Hands-on display of materials from the Square Foot Gardening presentation

Attendee Nancy Yoder browses through materials at the vendor marketplace

Wildflowers in McConihe 1 . . . *by Duane Pitts*

Until we moved to live in the countryside in McConihe 1 near the northeast edge of Mae Valley, I did not know wildflowers up close and personal. I grew up as an Army brat in towns in the US and overseas and lived in urban areas most of my life. As such, wildflowers were not a focus for me. Wildflowers were what I

saw at a distance when we traveled across country. Examples included blue bells in Texas, scotch broom in Tacoma and Lakewood, and various cacti in the Southwest on Route 66.

Common Yarrow (Achillea milleforium)

Four years ago this June 2017, we moved into our country home. Wildflowers were blooming all over the property. At first, I did not know toadflax from fleabane, so I treated them all with care and let them flourish, until our son Joshua pointed out the goat's head (puncture vine or Tribulus terrestris) at the edge of the driveway. Then our son Jeremy showed me the Dalmatian toadflax (Linaria dalmatica), which I thought was a wild snapdragon. Boy, was I surprised!

Since then, I have used the *Noxious Weeds That Harm Washington State* field guide for eastern Washington to eliminate problem weeds. Digging them up, picking green seed pods BEFORE dispersal, and bagging them were all the ways I discarded the unwanted noxious weeds.

Keeping the "pretty flowers," I see to it that they thrive for the beauty they provide and for the pollen that attracts bees and other insects. Some of those flowers are blue dwarf fleabane, foothill daisy, spreading phlox, and common yarrow. If they grow near the shrubs or other plants in the garden, along the driveway, or in the tree line, I water them to prolong their flowering season, which helps the bees and other pollen gatherers. Though the fiddleneck tarweed is a native weed, I let it be at the margins of the irises, for their yellow flowers with the red-orange centers are eye-catching.

Spreading phlox (Phlox diffusa)

Blue dwarf fleabane (Erigeron elegantulus)

Foothill daisy (Erigeron corymbosus)

Fiddleneck tarweed (Amsinckia lycopsoides)

I took these photos of flowers on the property last summer after I finally figured out their names from the *Wildflowers of the Pacific Northwest*. Most have come back this year, especially the fleabane in profuse numbers! I had already discarded the puncture vine and toadflax, but the noxious weeds guide from the state weed control board gives good images of these noxious weeds.

By no means have I identified all of the plants on the property, so I continue checking the "back forty" (actually the "back acre") before the cheat grass takes over for the season, if it hasn't already. I am sure there are more wildflower discoveries to be made.

References:

Turner, M. Gustafson, P. *Wildflowers of the Pacific Northwest*. Portland, OR: Timber Press, 2006.
Washington State Noxious Weed Control Board. *Noxious Weeds That Harm Washington State: Eastern WA Field Guide*. Publication 820-264E (R/6/11). Also check their website: www.nwcb.wa.gov
http://extension.wsu.edu/publications/pubs/pnw135/?p-page=5 on Toadflaxes
http://extension.wsu.edu/publications/wp-content/uploads/sites/54/publications/eb2010.pdf for Cover Crops, which include native flowers
http://extension.wsu.edu/whitman/wp-content/uploads/sites/28/2013/11/CommonFiddleneck2006.pdf for Common or fiddleneck tarweed

Weed Control Alternatives

As the weather heats up, the numbers of weeds multiply in our landscapes and gardens, particularly those many heat-loving weeds. According to Marianne Ophardt, recently retired from the WSU Extension faculty, weeds like Bermuda grass, crabgrass, foxtail, goose grass, purslane and prostrate spurge have different types of respiration and function better when temperatures are between 85° to 117°F. Our lawns in the Columbia Basin are primarily composed of cool-season turfgrasses that actively grow during the cooler months (March, April, May, October, and November). They become stressed during excessive heat, while these weeds are thriving.

But before you reach for that sprayer, consider this: the best weed control at this time of year is hoeing or hand weeding, not spraying, because of the potential damage to desirable plants and trees in our landscapes. In fact, scientists in the Pesticide Management division of the Washington State Department of Agriculture caution home gardeners against spraying when temperatures climb to the mid-70s or above. They say that generally a gardener won't get good weed control at these temperatures. Certain types of herbicides evaporate (volatilize) at these higher temperatures, and the vapor, or fumes, can drift long distances, causing severe damage to orchards, vineyards, landscapes and gardens. If you're spraying only your own lawn with a hand-held sprayer, problems are usually limited to damaging your property or your neighbor's property. When you spray larger areas, the potential increases to cause severe and widespread damage.

Marianne Ophardt says, "Symptoms of herbicide injury vary depending on the chemical, but common culprits are the growth regulator-type herbicides used to kill broadleaf weeds, like dandelions, in lawns. Exposure to growth regulator herbicides can cause leaf cupping, twisted or distorted growth, and strap-like leaves. The common growth regulator herbicides found in home garden products for lawns are 2,4-D, MCPA, MCPP, and dicamba. These products are available in liquids for spray applications or dry for applying as a granular broadcast application. When using them in liquid form, wind can cause the spray to drift away from the application 'target' area." Granular herbicides can also damage desirable plants because of uptake of chemicals through the roots. The labels of products containing dicamba indicate that it should not be used 'in the root zone of desirable plants.' If you have trees located in or adjacent to your lawn, it is hard to avoid applying the chemical in their root zone. The root systems of trees can go out as far as a tree is tall and even farther. Garden plants situated next to a treated area could also become damaged via root uptake.

Below is a summary of steps to take to safely apply herbicides during the spring and fall cooler months (excerpted from the Washington State Department of Agriculture (WSDA) Weed Spray brochure):

1. Read the label and follow it exactly before you apply any herbicide.
2. Never mix and apply product(s) at a stronger concentration than stated on the label.
3. Always wear protective clothing specified on the label (rubber gloves, boots, etc.)
4. Be careful of the wind. Never spray when it's too windy. Watch the spray as it comes out of the nozzle. If it's moving away from where you're directing it, it's either too windy or the spraying pressure is too high.
5. Don't spray during high temperatures. The best time is spring or fall when day-time temperatures are not too high.
6. Don't spray when there is a temperature inversion when there is no air movement (dead calm). During inversions, tiny droplets that are too small to see become suspended in the air and will move offsite, damaging any sensitive plants in their path.
7. Spray only when conditions are right, using a calibrated sprayer.
8. Don't pump up your sprayer excessively. This will create very fine droplets that drift more easily and travel farther. The herbicide should come out as a coarse spray with a minimum of tiny droplets.

For further information on proper spraying, contact WSDA at 877-301-4555 or by email: compliance@agr.wa.gov.

References:
Marianne C. Ophardt, *Herbicides Can Curl Leaves Too*, Tri-City Herald, Kennewick, WA, June 6, 2014
Marianne C. Ophardt, *Some Weeds Grow Best When It Is Hot*, Tri-City Herald, Kennewick, WA, July 23, 2015
Use Weed Killers Safely, Washington State Department of Agriculture, Pesticide Management Division, AGR PUB 706-597A (N/3/17)
Calibrating Ride-on Pesticide Sprayers and Fertilizer Spreaders: ppp.purdue.edu/wp-content/uploads/2016/08/PPP-104.pdf
ATV Boom Sprayer Calibration (video): goo.gl/dfHWY5

Cover Cropping For Soil Quality . . . *By Mark Amara*

Forty people attended the WSU/Tilth Alliance- sponsored field day on May 22, 2017, at Lenwood Farms, operated by Brad Bailey in northern Franklin County, which like Grant and Adams Counties, lies in a 6-9" annual rainfall zone. Brad explained the intricacies of this farm operation, which is constantly evolving, as he experiments with ways to make it more sustainable, just as gardeners do. He welcomes farm tours there as opportunities to network with others and learn from "other peoples' perspectives, knowledge and experience."

The farm has over 800 acres of which approximately 600 acres are irrigated (from deep wells) and farmed organically. The remaining acres are either retired cropland planted in perennial grass through the Conservation Reserve Program or in grass, forbs, trees, and shrubs that serve as habitat for beneficial insects and other wildlife. Crops grown have included heirloom wheats, black barley, onions, potatoes, spearmint, catnip, peas, sweet corn, beans, camelina, butternut squash, and spinach. Brad is using innovative methods to manage the cropland using alternative organic methods, which has eliminated pesticides and commercial fertilizers. Gardeners take note.

Cover cropping is of major importance to the Bailey operation. It entirely replaces the application of commercial fertilizers, creating conditions so that plant matter is recycled naturally with the goal of improving soil quality, thus allowing the farm to raise high quality organic crops. Cover cropping adds copious amounts of organic matter and nutrients to the soil and assists with weed control. Cover crops observed during the field day included (chickling) vetch on one field and a blend of 20 lbs/acre vetch and 40 lbs/acre triticale on another. About this time of year these crops are flailed (mowed) and then incorporated in the top 6" of the soil. Then, in the fall, mustard is planted and serves as a bio-fumigant. Upon maturity, it is incorporated in the soil to control nematodes, diseases and weeds prior to planting onions or potatoes the following spring (McGuire 2016). Also used for cover is a blend of forage peas and triticale. The legumes (peas and vetch) are important sources of nitrogen, while triticale and mustard help add organic matter.

A combination flail mower and rotovator chops green manure crops and incorporates them in the field in a one-pass operation

Brad Bailey discusses insectary habitat

Insectaries present on the circle corners and odd-shaped non-farmed parts of the operation have slowed the incidence or impacts of insect pests, provided pollinator species and beneficial insects as well as converted weedy areas to permanent cover.

The above-mentioned management system is one approach to improving soil quality. There are many other techniques; farmers as well as gardeners can use the same techniques . . . it is merely a matter of scale.

Soil quality or soil health is described as the ability of the soil to support plant and animal productivity, maintain or enhance water and air quality, and support human health and

habitation (Karlen et al 1997). It covers a wide range of interrelated physical, chemical, and biological soil characteristics. Properties that can be impacted include soil organisms, fungi, biota, respiration, texture, pH, and organic matter. For example, organisms in the soil break down crop residues to release nutrients including nitrogen, soil fungi help with soil structure, soil biota are pH dependent, which means there is lower biological activity in acid soils. Although texture is fixed depending on where you live, organic matter can improve drainage, aeration, water holding capacity and nutrient retention (McGuire et al 2017: 1). Soil properties are influenced by the environment in which they occur, which means they are affected by climate, geology, and vegetation and by humans who are contributors to erosion, nutrient management, water availability, and plant selection.

Many soil quality variables can be tweaked, depending on the desired management goals. A nationally recognized guide is the Cornell Soil Health Assessment, which measures 10 properties and calculates an overall soil health rating. Unfortunately, that assessment was developed for soils in the northeast US and may not reflect conditions present here in the Columbia Basin. However, if growers and gardeners use an improved planted crop as an indicator of soil quality, it can incorporate the effects of different soil properties with improved management.

Columbia Basin soils are light textured and can be prone to wind erosion during windy periods, especially during the spring and fall when soils are most likely to be bare. Maintaining crop residues can help keep soils in place. However, the challenge in our area is that the wide diversity of commercially grown crops sometimes does not coincide with adequate cover though alternating high residue crops with low residue crops, rotating crops, adding perennial crops and planting cover crops can help. Even in our dry climate, irrigating soils with low infiltration rates that have been intensively tilled can cause ponding, poor drainage, and crusting. At the Bailey farm, an added challenge has been to figure out how to ameliorate the effect of high pH deep well water on soils that are already slightly alkaline. Native soils in our dry climate generally have organic matter percentages of less than 1%, so improving organic matter can be beneficial for many factors. Whatever management can be done to improve soils will help reduce erosion, improve nutrient cycling and soil tilth, reduce impacts of soil borne diseases, and improve water holding capacity and infiltration.

The types of management practices on large farms being experimented with in the Columbia Basin include organic soil amendments, cover crops and green manures, and high residue farming. At the Bailey farm (Lenwood Farms), the emphasis has been on cover crops and green manures. Unofficial measurements of between 100-400 lbs/acre of plant matter/nitrogen were estimated using the cover crop/green manure scenario, but when the material is incorporated and irrigated, there appears to be significantly less nitrogen available to the next crop. Still, the benefits of reducing dependence on commercial fertilizers and pesticides, improving crop consistency and color, and crop quality are all benefits that have been realized since being introduced in 2003. These same principles can be applied to gardens throughout the Columbia Basin. Using a variety of cover crops, practicing residue management, and experimenting with organic soil amendments are all applicable to improving the fertility and sustainability of our own gardens.

References:

Karlen, D. L., M. J. Mauback, J. W. Doran, R. G. Cline, R. F. Harris, and G. E. Schuman. 1997. Soil Quality: A Concept, Definition, and Framework for Evaluation (A Guest Editorial). *Soil Science Society America Journal* 61: 4-10.

McGuire, A. M. 2016. Mustard Green Manures. *Washington State University Extension Publication FS219E.*

McGuire, A. M., D. Granastein, and M. Amara. 2017. An Evaluation of Soil Improvement Practices Being Used on Irrigated Soils in the Columbia Basin. *Washington State University Extension Publication TB41E.*

Biodegradable Mulching – Work in Progress . . . *By Mark Amara*

Thirty people attended a biodegradable mulch field day event at Cloudview Farms, Ephrata, on May 25, 2017. Using a mulch laying machine, four commercially available products were laid in 135-ft-long rows. Mulches used included standard polyethylene black plastic, Weedguard Plus paper mulch (a Sunshine Paper Company product), Organix AG, a polylactic acid and petroleum-based mulch blend, and Bioagri's cornstarch based mulch. The range in thicknesses varied from about 0.6-1 millimeters. A green manure cover crop,

which consisted of triticale, vetch, forage peas and rye, had been tilled in prior to the treatments. Crop residue fragments of the more durable triticale were abundantly seen in the field though signs of the other crops were not visible.

Jeremy Cowan, WSU Horticulture Extension Specialist, discussed the products being demonstrated. He is flanked (left) by Cloudview Farm, Royal City Farm Manager, Jim McGreevy and attendees. On the right hand side of the picture is paper mulch while plastic mulch is in the middle and another product, Organix, semi-biodegradable mulch is in the left background.

The trial is part of a multi-year tri-university effort to study biodegradable mulches in farm situations, though the same treatment principles are applicable to small farms and gardens. Some of the considerations being studied include the impact on the environment, product durability, their breakdown constituents, their ability to degrade while protecting the growing crops, cost comparisons, ease of use, and whether they are realistically adoptable. Washington State University, University of Tennessee, and Montana State University have been collaborating on this project and in-field tests have been run on Washington and Tennessee experiment station farms. Each of those locations is in high rainfall, high humidity, and heavy soils and may not reflect variable climatic and soil conditions in which mulch products may have to perform. As part of an advisory group working with the researchers on the tri-university effort, Mark Amara encouraged the technology adoption working group to consider establishing an on-farm case study in the Columbia Basin where there are light textured soils, high potential wind events, a dry climate, and a wide diversity of crops in a highly productive irrigated environment. The challenge was to find a farm willing to participate. After extensive research and farm visits, Cloudview Farms, Ephrata, owned by Jim Baird and managed by Josh Ewert and Carli Thompson was settled on for 2017.

Josh Ewert, Cloudview Farm, Ephrata Farm Manager, and Jeremy Cowan evaluate paper mulch laying which ripped along its edges during installation.

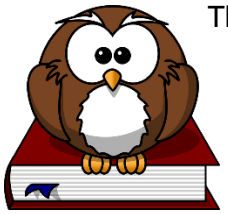
The soil is a well-drained deep-silt loam (called Esquatzel according to Web Soil Survey) in a high (potential) wind area in a 6-9" annual rainfall zone with long dry hot summers. Mulches were laid down and will be drip-irrigated using two drip tapes per row. Drip irrigation is preferred rather than using overhead sprinklers, which tends to accelerate mulch degradation. Setting up the machine took some tweaking though the skill and experience of the equipment operator, Jim McGreevy, made it look easy. Even with his guidance, there were challenges in laying the mulches down. The PE plastic mulch was the most durable and easy to install. However, it is not biodegradable and will be removed at the end of the growing season. Where the ground was irregular, the machines disk coulters cut the paper mulch, which ripped along its edges, and, whenever the 3 point hitch wobbled, the paper zagged and folded. Covering up the edges with a shovel after installation was necessary on the paper mulch and with other biodegradable mulches to ensure that it would not blow off and would be uniformly stretched. How these materials break down over time will be evaluated as well as recording the perceptions of the farmer as to their success or not. Squash seedlings are being planted in holes made in the mulches.

Multiple strips of competing products were installed in the field for comparison

While the paper mulch meets the national organic standard and completely disintegrates, the other products are not fully biodegradable and do not currently meet the National Organic Program standards. Since most products contain petroleum based components, they are unlikely to completely break down though over time that remains to be seen. The plan is to hold another field day in late summer and/or fall to look at mulch degradation and/or evaluate the mulch products which will be tilled into the ground and then again the

following spring to evaluate the ground in an attempt to see what is left. Product costs may also be compared. Currently, the cost of plastic mulch is approximately one third the costs of paper or the semi-biodegradable products which may have an impact on adoptability though as new products are introduced, costs will undoubtedly come down as demand grows.

Test your knowledge (from Grounded Newsletter March 2017, Vol 6, number 1)



The Grant-Adams Master Gardeners have an opportunity to earn 1 hour of continuing education credit by simply reading the *Grounded* newsletter and answering a 20-question quiz in the newsletter based on the previous quarter's published newsletter articles (http://extension.wsu.edu/grant-adams/gardening/master_gardeners/). Anyone can complete the quizzes for fun OR Master Gardeners may complete and submit their answers to the Program Coordinator and record 1 hour toward continuing education. Answers will be available in the following newsletter.

1. Only recently gardeners and farmers have started saving seeds?
    a. True
    b. False
2. The first emerging leaflets on a newly sprouted seed are called:
    a. Pistils
    b. Stamen
    c. Cotyledons
3. Seeds can transmit diseases?
    a. True
    b. False
4. Master Gardeners hold an annual plant sale and raffle to raise funds which support:
    a. Demonstration gardens and seed libraries
    b. Presentations and classes
    c. Educational materials and symposiums
    d. All of the above
5. The Eco-Gardening Symposium was held on April 22, 2017. What was the focus of this year's event?
    a. Vegetable gardening
    b. Flower gardening
    c. Country gardening
    d. Farming
6. The Master Gardener of the year award is awarded for community involvement, educational impact, promotion of the WSU MG program goals, commitment, leadership and sometimes, legacy:
    a. True
    b. False
7. Research has shown that cover crop polycultures are not necessarily better than cover crop monocultures
    a. True
    b. False
8. Cereal rye is a great weed suppressor, but it does not:
    a. Fix potassium
    b. Fix phosphorus
    c. Fix nitrogen
    d. All of the above
9. Cover crops mixes are not the restore-everything-to-as-it-should-be final solution:
    a. True
    b. False

10. Cover crops grown over a short period of time are:
    a. Perennial
    b. Biennial
    c. Annual
    d. All of the above
11. Monoculture cover crops are:
    a. Effective
    b. Economical
    c. Easy to plant
    d. All of the above
12. Floating row covers can extend the growing season?
    a. True
    b. False
13. Row covers can provide passive heat source as well as protection from:
    a. Frost
    b. Insects
    c. Small critters
    d. All of the above
14. Row cover material comes in different thicknesses and weights. A heavy weight row cover can provide frost protection at what range?
    a. 20-24°F
    b. 28-32°F
    c. 24-28°F
    d. 20-32°F
15. When using row covers for insect protection, you should carefully check the plants before and after covering to reduce infestation issues.
    a. True
    b. False
16. Box Blight is:
    a. Fungal disease
    b. Viral disease
    c. Bacterial disease
    d. None of the above
17. The scientific name for the common bed bug is
    a. Lectularius cimex
    b. Cimex lectularius
    c. Musca domestica
    d. Culicidae
18. See it! Report it! Is a new app launched to allow invasive species managers in Washington State to more quickly respond to a new invasive species?
    a. True
    b. False
19. See it! Report it! Allows anyone with a smart phone to capture a picture, geographic coordinates and sighting information, which then automatically alerts the Washington State Invasive Species Council
    a. True
    b. False

20. Nationally, invasive species cost more than $137 billion annually in:

    a. Crop damage
    b. Fisheries reduction
    c. Forest health
    d. All of the above

Answers to the November 2016 CE Quiz: 1-d, 2-c,3-a, 4-d,5-a, 6-d, 7-a, 8-d, 9-b, 10-a, 11-b, 12-d, 13-a, 14-a, 15-a, 16-c, 17-a, 18-a, 19-a, 20-c.

Master Gardener Plant Clinic Schedules

WSU Master Gardener volunteers are available to address your home gardening questions. Grant County's many budget/personnel changes in the past few years have impacted how our Master Gardeners communicate with the public. You may contact a WSU Master Gardener with your home gardening questions through the following e-mail address: ga.mgvolunteers@ad.wsu.edu. Messages sent to this address will be answered by the MGs in a timely manner. For face-to-face contact, or if you have a plant or insect sample that you would like to have identified, please see a Master Gardener at one of the following locations:

- **Ephrata Farmers Market:** Grant County Courthouse, 35 C St. NW, first and third Saturdays, June through September, 8 a.m. to noon.
- **Moses Lake Farmers Market:** McCosh Park – Dogwood Street Side, Saturdays, May through October, 8 a.m. to noon.
- **Othello Ace Hardware:** 420 E. Main Street, fourth Saturday of each of the identified months: May 27, June 24, July 28, and August 26, 2017, through August 9:00 a.m. to noon.
- **WSU Grant-Adams Extension Office:** 1525 E. Wheeler Rd., Moses Lake, second & fourth Mondays, April through October, 9 a.m. to noon.

Mark Your Calendar

Seed Saver Talks · Ephrata Public Library – Second Saturdays through October

July 8 – Off With Their Heads – Vegetable & Flower Pruning

August 12 – Hey Herbs

Sept 9 – Seed Saving 101

October 14 – Seed Swap

Free tours and discussions led by Master Gardeners in the Community Education Garden, NW corner of Western and Springwater Avenues, Wenatchee, 10 a.m. to noon through September

***June 17** – The Buzz about Pollinators

***July 15** – A feast for the Eyes: Integrated Gardens

***August 19** – 7th Annual Tomato Gala

***September 16** – Cultivating Community:A Harvest Celebration

August 30, 2017—Deadline to register for the bi-annual Grant-Adams Area Master Gardener training