GROUNDED

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http://county.wsu.edu/grant-adams/Pages/default.aspx · ga.mgvolunteers@ad.wsu.edu

Mosquitoes—Can plants keep them away in your yard?

. . . By Diane Escure

"Anyone who thinks that they are too small to make a difference has never tried to fall asleep with a mosquito in the room"—Anita Roddick

INSIDE THIS ISSUE

Who hasn't been deterred from working outside, planting, weeding, pruning, watering, or puttering in the garden, when a mosquito or two or an army of them show up? These persistent pests with their whiny buzz can ruin an otherwise enjoyable day spent outside. Besides being a nuisance, mosquitoes are carriers of deadly diseases and cause millions of deaths worldwide. Fortunately, malaria doesn't occur in Washington State, but a type of encephalitis caused by the West Nile virus has been found in humans, horses and birds since 2002. No human cases so far have been reported in 2019 (www.cdc.gov) although there have been nonhuman reports in south Central Washington this year.

There are 3000 mosquito species in the world, according to the American Mosquito Control Association (https://www.mosquito.org/default.aspx), 200 species in North America, and 40 different species in Washington State (www.doh.wa.govCommunityandEnv). In Central Washington, the most common are the Northern house mosquito (culex piens) and the Western Encephalitis mosquito (culex tarsalis).

Mosquitoes need water for reproduction. Female mosquitoes lay their eggs on top of standing water, where the larvae develop. These places include wading pools, bird baths, pet water bowls, buckets, flower pots, tarps, plastic weed barriers, low lying areas in the ground, and clogged gutters. Since both male and female mosquitoes feed on plant nectar as their food source, a property that has a lot of flowering trees and landscaping will attract mosquitoes. They hide out in overgrown vegetation and tall grasses during the heat of the day. They can also travel great distances in search of food or a blood meal (only the females bite in search of protein that's found in blood to develop her eggs).

How to Prevent Problems with Mosquitoes

If you search online for plants to repel mosquitoes, you'll find any number of articles pop up with a list ranging from catnip, peppermint, rosemary, marigolds, lavender, garlic, and scented geranium. However, there hasn't been any scientific evidence that any of these plants by themselves (or citronella candles) will effectively deter them. Even just standing by these plants is not effective. Crushed leaves or refined extract from some of these plants, however, have been formulated into products for sale as natural alternatives to chemical repellents and their effectiveness is comparable to a low-percentage DEET product.

Another common misconception is that attracting bats will keep mosquitoes at bay. While they do eat mosquitoes, their effectiveness in controlling mosquito populations is limited.

Here are tips to help you prevent mosquito bites during warm weather:


Mosquito. Photo source: Wikipedia

- Eliminate standing water on your property, including puddles, and landscaping depressions
- Keep gutters clear of clogs and debris
- Manage weeds near ornamental pools
- Remove floating debris from ponds
- Make drainage holes on containers that may trap water, such as barrels
- Drill holes in old tires
- Remove aluminum cans or any other artificial water containers.
- Fill tree holes with sand or mortar so water cannot accumulate
- Mow your lawn often and remove overgrowth
- Remove sheets of discarded, crumpled polyethylene film (often used as plastic mulch), since they catch water easily, shield against evaporation, and even help moisture condense
- Check and regularly drain pool tarps and Jacuzzi covers for collected rainwater
- Replace or repair window/door screens
- Avoid going outside when mosquitoes are most active.

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Memorial Bench Sits Well

The Grant-Adams Master Gardener Foundation cooperated with the City of Moses Lake to design a space and install a permanent memorial bench and plaque in Civic Park near the Moses Lake Public Library during the summer of 2019. The purpose of the bench is to honor Master Gardeners who have served in Grant and Adams Counties since the program's inception. The City of Moses Lake Parks and Recreation department staff prepared the ground and laid out wooden forms prior to pouring a concrete pad on which the bench was set earlier this summer.

Once the concrete work was finished, a permanent plaque was secured to the concrete. The plaque honors Master Gardeners who have served in Grant and Adams Counties since its first class in 1982, and it is there for all Master Gardeners and the public to enjoy.

WSU Master Gardeners, (left to right) Marta Tredway, Glenn Martin, and Barbara Guilland tried out the bench and found it comfortable, well built, and in a good location.

The bench was placed in a strategic location in full view of the drought-tolerant garden and native plant garden established and maintained by the WSU Grant-Adams Master Gardeners.

Plaque placed on the ground near the Master Gardeners' Drought-Tolerant Garden next to the Moses Lake library. All photographs in this article were taken by Mark Amara.

Coordinator's Corner

Our WSU Master Gardener Volunteer Program Co-Coordinator's responsibilities have shifted a bit. Duane Pitts and Mark Amara continue as active coordinators. Terry Rice stepped down and Diane Escure stepped up to fill her vacancy. All three of us provide insight on program direction to the twenty active WSU Master Gardeners (MGs) in Grant and Adams Counties, help with training, and strive to find and recruit new MG trainees in time for a September 2019 class start up. In addition, the coordinators are the go-to-people to answer questions about the program, communicate with all the MGs in our two-county area, interact with Washington State University, and prepare reports and make presentations that promote the program.

WSU MGs are trained through Washington State University and agree to follow established standards. All certified MGs volunteer their time in a variety of community outreach activities to maintain their credentials. Approved activities include organizing educational events such as an annual gardening symposium; teaching gardening classes; maintaining and improving demonstration gardens in Moses Lake, Othello, Ephrata and Soap Lake; working with the Ephrata Seed Library; writing articles for various news media and publishing a quarterly newsletter; and staffing periodic plant clinics at farmer's markets, community events or through a free online Q & A service. MGs are supported by the Grant-Adams Master Gardener Foundation (MGF), a nonprofit group that provides financial support for the Master Gardener program.

Although the Master Gardener program is administered through Washington State University Extension, no funds are provided to maintain or improve it and the program coordinators are unpaid volunteers. Anyone interested in gardening and helping others become more informed gardeners can join the MGF and/or contribute to it as a tax-deductible donation. This is all part of an effort to keep the public engaged, helping citizens learn and practice sustainable horticultural practices at home gardens, yards, and small acreages in urban or rural settings. The Master Gardener program is directed at helping home gardeners, so questions from large-scale producers or commercial growers are passed on to appropriate Extension agents.

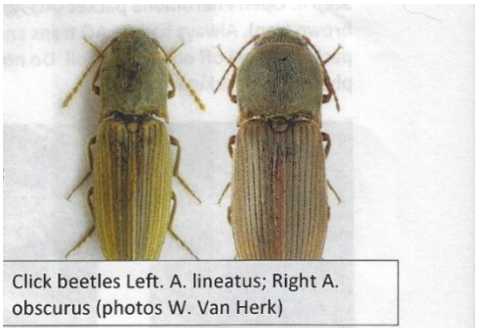
Anyone who would like to take the next scheduled Master Gardener training program may sign up through the Grant-Adams MG website, pick up an application at the WSU Extension Office in Moses Lake at 1525 E. Wheeler Rd, or at the Moses Lake Farmers Market plant clinic in McCosh Park (Saturdays May through October), the Quincy Farmers Market at Lauzier Park (1st and 3rd Saturdays through September), or in Othello at Ace Hardware (last Saturday of each month through September). Applicants for the training have until August 31, 2019, to sign up. Individuals who are approved will begin training in September 2019 if enough students sign up.

Click Beetle Project Monitoring . . . *By Mark Amara and Duane Pitts*

This spring-early summer 2019, WSU Master Gardeners Mark Amara and Duane Pitts participated in a collaborative project to determine if and where either or both of the two species of adult male click beetles (aka wireworms) are present at different locations throughout the state. Click beetles are the adult forms of wireworms.

The project is funded by a USDA Western SARE (Sustainable Agriculture Research and Education) grant awarded to Washington State University and the Washington State Department of Agriculture. In 2018, monitoring took place throughout western Washington, and in 2019 efforts were expanded to cover the entire state. WSU Master Gardeners were among the monitors solicited to help collect the beetles. Click beetles are famous, or infamous, for the clicking noise they make to get away from or shock a potential predator and the effort it makes can also be a useful tool in helping to "right" itself if it is turned upside down.

The two click beetles that we were attempting to attract with lures were Agriotes lineatus and Agriotes obscurus. As instructed, we each placed our two traps in the soil so the lid was flush with the ground and at least 15 feet apart near a grassy field, lawn, or meadow. We placed the pheromone lure at the bottom of each collection cup. Click beetles don't climb steep plastic walls, so there was no fear of their climbing out when they found out there was no female present. We used a different pheromone lure for the two species.



Click beetles Left. A. lineatus; Right A. obscurus (photos W. Van Herk)

Traps consisted of an inverted plastic "brimmed hat" base (left picture), a smooth sided plastic collection cup and pheromone lure (middle picture), and a pronged top lid (left picture). When properly installed in the ground, the traps were flush with the surface but allowed access into the cup (right picture). Pictures by Mark Amara.

The traps were created by Bob Vernon at Agriculture and Agri-Food Canada, Agassiz, B.C. to trap two species of adult male click beetles and were provided for the effort by Wim Van Herk.

We emptied the two collection cups once a week into individual labeled Ziploc bags and placed the bags in the freezer. The weekly collection period extended for six weeks from May 19 to June 29. We did not have to identify which species fell into the traps, as the pheromone lure is not 100% effective. At the end of the monitoring period, traps and sample bags were sent to Christopher Looney at the Washington State Department of Agriculture in Olympia. Chris is responsible for identification and analysis. Results are expected to be completed by this fall when a summary of findings will be issued.

Of course, other insects also fell into the traps and were also unable to climb out, ants in particular. Duane "caught" three click beetles and Mark caught several apparent beetles but did not corroborate their identities, instead leaving the official identification to the researchers.

We understand that the click beetle is of interest to (commercial) agriculture and gardeners in the state because of damage its larvae can cause to crops like beets, corn, wheat, potato, carrot, onion, leek, lettuce, cabbage, peas, beans, radishes, sunflower, alfalfa, melons and others. Even flowers do not escape the wireworm wrath and several herbaceous ornamentals including asters, phlox, gladioli and dahlias are commonly infested. The best pest control method is to identify their presence and till the soil at peak activity of the larvae and use crop rotation to lessen the larvae's impact. Spraying with pesticide does not kill the larvae: it adjusts to the pesticide in a matter of a few months! Currently, wireworms can only be managed with cultural and mechanical methods because there are no pesticides registered for controlling them in home gardens.

We look forward to the final report in the fall, when we will report the state findings and, we hope, alternatives to controlling wireworms for our region of the Columbia Basin.

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Growing Roses in the Columbia Basin: Part III. Diseases and Winter Protection . . .

By Barbara Guilland

The dry climate in the Columbia Basin discourages some diseases common to roses such as powdery mildew, rust, black spot, and Rose Mosaic Disease (RMD). Those diseases might appear, but they usually occur under more moist, humid and warm conditions. Many roses are rated according to their resistance to these diseases. Problems can be limited if you know and choose varieties that are more resistant to these diseases and irrigate the rose bushes carefully.

Proper pruning techniques, planting with enough space between plants, and avoiding most overhead watering all help create healthy beautiful roses. Even so, it helps to know what is wrong when symptoms appear. Fungicides are available for these diseases, but consider moving the rose to a better place rather than trying to eliminate the fungus because treatment requires repeated applications through a season and may include several seasons.

U of Illinois Extension -p. mildew

Powdery Mildew: The leaves are distorted and covered with fine white fungus growth. Powdery mildew is not caused by water on the leaves and you can actually wash off the fungus with a vigorous water spray by midday. This interrupts the daily spore release and allows the leaves to dry before evening. Keep the ground clean by collecting and disposing of falling leaves. Planting in a sunny location with good circulation might eliminate the problem for vulnerable varieties.

Gardener's World BBC -rust

Rust: The leaves develop small orange pustules on the back of the leaves and the front side of the leaves discolor; the leaves drop off. This can be controlled with a fungicide, but proper watering, severely pruning back affected canes and disposing of leaves can be done and is effective enough. It is a fungus that occurs in cool, moist weather or on shrubs with poor air circulation.

U of Illinois Extension -black spot

Black Spot: Produces feathery or fibrous margins on the upper surfaces of leaves and stems. It most often occurs on miniature roses. Some cultivars are more resistant than others. The same remedies apply as with other fungi. Much of the fungus can be removed with a vigorous spray of water. Decrease the humidity if you can, remove all affected leaves, and improve the air circulation around the plant. The last resort is a fungicide formulated for black spot.

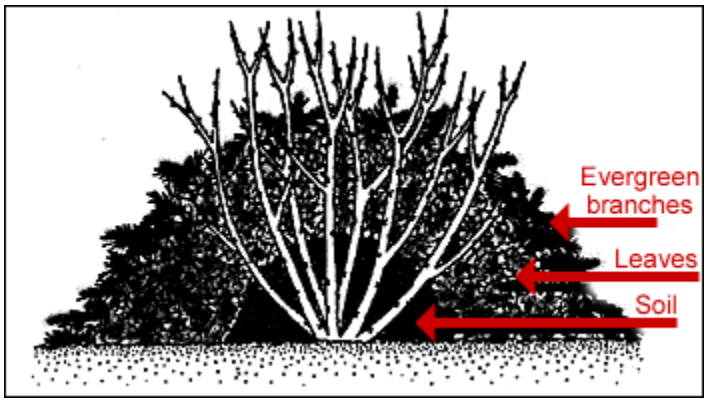
Jay W. Pcheidt -Rose mosaic disease

Botrytis: Is a fungus that affects the buds and flower petals. Buds fail to open and petals are spotted. It's usually caused by high humidity and not much of a problem in the Basin.

Rose Mosaic Diseases (viruses): The viruses that affect roses are a more complicated matter. They occur wherever roses grow. A number of different viruses have symptoms that are similar. Most of the damage is cosmetic and does not necessarily reduce the vigor of the plant. You may notice leaf damage that appears and disappears as the weather and yearly conditions change. Commercial growers are more concerned that plants look saleable and thus are more concerned about causes of these viruses. One of the arguments for buying roses that are grown on their own root would be that it lowers the likelihood of spreading a virus infection. Other factors that affect the appearance of rose buds, petals, leaves, and canes are insects, galls, sunburn, and winter injury, all topics for another article.

Winterizing Roses: Of far more concern to rose gardeners in the Columbia Basin than diseases is how to rotect the plants from winter damage. If you choose a rose that should be grown in a warmer zone, there are ways to work around keeping the rose alive during a cold winter. Get used to using these methods for all your roses because a deep and sudden drop in temperature to 0°F or below will kill roses that have not been prepared for it regardless of their zone rating.

We have winter temperatures that normally fall below 15˚F with occasional deep freezes to -10˚F. To some extent snow is a good insulator for roses, but we have many open winters where snow can't provide that protection and good roses that should have lived will be lost or frozen back to the root stock.



1. **Hardening off** roses as winter approaches means that you should stop fertilizing in early September. Let the last blossoms stay on the plants and create rose hips. It is an indication of slowing growth for the plant. **Keep roses well watered until the soil freezes**, which is less stressful for the plant.
2. After a few freezes, **prune canes lightly** to lessen chances of the shrub drying out. It's a good time to remove dead and diseased canes and clean out old leaves. Then build up a firm mound of soil or compost 8 to 12 inches high around the base of the plant. (Use soil from elsewhere in the garden, not from around the roots of the plant.) Part of the canes will still be exposed.
3. **Use some kind of retainer,** chicken wire or netting, staked down around the frozen dirt mound. This is a good time to f**ill it up** with a layer of dry, organic matter like chopped leaves, straw, evergreen boughs, coarse bark mulch, etc.
4. In early spring **begin pulling away the mulch**, after hard frosts are over. As the soil mulch begins to thaw, remove it gradually being careful not to damage new shoots and leaving mulch to cover new shoots if there are late frosts.

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Cover Crops Build Better Soils . . . *By Mark Amara*

Cover crops can be grown in any garden to improve soil condition and health whenever the ground is bare. Besides providing weed control and (wind and/or water) erosion control, planting short- (or long-) term cover helps shade the soil, and plant residues protect the ground surface if left standing, mowed, flailed or crimped, or tilled into the soil. As the cover crops grow, roots help break up compacted layers, recycle nutrients, take up excess fertilizer, help reduce weed pressures and diseases and control insects including nematodes. As cover crops mature, their flowers and pollen help attract (beneficial) insects to the garden. When this vegetation is incorporated into the ground as green manures, it adds nutrients and organic matter to the soil. Since soils in the Columbia Basin are naturally nutrient poor and lack organic matter planting annual cover crops can be of great benefit.

Cover crops are divided into perennials, planted for year-round (long term) cover, and annuals for seasonal (short term) coverage. Though perennial cover takes longer to become established, having year-round grasses and/or legumes between trees and shrubs or separating garden rows can help control weeds and reduce erosion. Planting short-season varieties of grass and grain seems to be a common method in the Columbia Basin as the plants establish quickly, put down extensive root systems, can capture unused nitrogen in the soil, and can be replanted over and over. It is important that cover crops are destroyed by mowing or tilling preferably prior to or at seeding to reduce spreading, reseeding, and deter further uptake of nutrients from the soil.

Some gardeners plant cover crops in the fall to provide winter cover while others plant them in spring, summer and/or fall. The reasons for planting vary with the gardener, species planted, and expected benefits. Legumes are natural choices for those who wish to add nitrogen to the soil (Note: be sure to mix in inoculant with legumes), and grasses are a good choice to help compete with weeds on a broader scale and for quick establishment. Using mixes rather than single species would seem to provide a wide range of complementary benefits but scientific research results vary. Mixes can increase biodiversity but dominant species tend to suppress other plants in a mix. Not all mixes provide the same benefits: mixes with a legume and a grain each provide complementary benefits, one adding nitrogen while the other adds biomass. Planting a mix increases the potential risk that a pest will find something in the mix it likes though it also has the potential of attracting predator insects that can theoretically control the harmful ones. Finding the right mix without an increased cost of making a blend may not be as cost effective as planting a single species, and planting a monoculture seems to provide more uniform crop rotation benefits. However, both monocultures and polyculture plantings provide some benefits. Almost any cover crop provides some benefits, so gardeners can try one or the other or both using some experimentation to find treatments that work.

Examples of annual grasses and grains that thrive in our area include winter wheat, triticale, oats, barley, and annual ryegrass. Recommended annual legumes include vetches, clovers, Austrian winter pea, and fava bean. Additional cover crops are restricted to frost free periods, typically planted in late spring and summer, and include buckwheat, yellow mustard, sorghum-sudangrass, and millets. Some additional testing is being done by local farmers with technical support from Washington State University using legumes like cow peas and sunn hemp as well as sudangrass, black oats, and radishes that show promise for use by home gardeners.

Buckwheat. Photo by Mark Amara

Since Columbia Basin soils are naturally low in organic matter, typically with less than 1% in the native state, whatever gardeners can do to add beneficial vegetal material has to be good for the soil not only to help deter erosion but to improve tilth, control weeds, and to build a healthier biodiverse ecosystem. Adding organic matter in this way is not a one-time fix – consider doing it annually to maintain or improve soil tilth.

Austrian winter peas. Photo by Mark Amara

Check out the sources below for seeding rates, availability, planting dates, species and further justifications.

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"Harvesting" seeds from your garden . . . *By Pat McAfee*

Today in many countries lots of gardeners save their own seed, and the practice is growing in popularity in the United States. It's fun, easy, and there is a special feeling of accomplishment that comes from growing seed, saving it, and growing it again. Whether you're new to seed saving or want to brush up on the practice, seed saving basics are a good place to start.

- **Choose plants that work best for seed saving**

  First, find open-pollinated (OP) varieties which are plants that keep their distinct characteristics generation after generation and do not cross-pollinate with other varieties of the same species.

  Herb seeds, like cilantro, dill, basil, and parsley are relatively easy to save. Common OP vegetables include peas, beans, lettuce, tomatoes, peppers, and radishes.

  Hybrids cannot be used for seed saving as the seeds will not grow. Many types of tomatoes, squash, cucumbers, broccoli, spinach, beets, carrots, and corn are hybrids. They usually have the designation F1 with their name. Seed catalogs and packets typically have this information in the crop description. If the description doesn't indicate that it's a hybrid, assume the plant is an OP.

- **Experiment with crops that are easy to save**

  Plants like peas, beans, lettuce, and tomatoes are good for beginning seed savers to start with. These plants are all annual self-pollinators that require very little to no isolation. You only need a few plants to produce seeds that yield well.

- **Provide Enough Space**

  Make sure to save extra space so plants are not crowded and there is adequate space between different varieties of the same crop. For crops that are wind or insect pollinated, more space is needed to isolate plants to prevent cross pollination. Crops that normally cross pollinate include the brassica family and cucurbit family. For other crops, pollination may require larger isolation spaces, establishment of pollination barriers and even pollinating by hand.

- **Collect seed at the right time**

  It's important to understand when your seeds are most likely to be mature. Crops that produce wet fruits (like eggplant, cucumber, and summer squash) produce seeds that are not always mature when

the fruits are ready to eat. This is because the "fruits" are in reality immature and edible, but still have to develop further before the seeds reach full maturity. To allow seeds to mature means that seed savers need to leave a few fruits in the garden and then remember to collect them after the seeds reach full maturity. Other crops, sometimes referred to as "dry fruits" may include grains lettuce and beans from which seed can be collected after the plants dry down and the seed becomes hard.

When deciding to save seed, choose what appear to be strong, healthy plants. After the "fruit" is allowed to become over-ripe or past its prime (for eating), pick and remove the seeds. Allow plants of peas, beans, and corn to turn yellow and begin to dry on the vine or stalk. Pick out the seeds and let them dry in a dark, warm (not hot) well-ventilated area with good air movement outside or inside.

For lettuce, spinach, herbs and brassica crops, the seed heads form after the blossoms die. As the seed ripens, it typically turns a darker color. Cut the plant off and hang to dry. Sometimes it's best to put the stalks, pods, or shelled seeds in a paper or cloth bag to contain the seed and also allow good air circulation.

After the seeds are dry, separate and wrap them in paper, place in envelopes or glass jars, each with identifiable labels and keep them in a dark, dry, cool place. A cool, dry basement or garage (that does not freeze) is ideal. Moisture and light must be avoided to keep the seed viable.

Now you'll have a head start on next season's garden with seeds that you've saved from some of your favorite plant varieties!

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Seed Savers Exchange. How to Save Seeds. https://www.seedsavers.org/how-to-save-seeds

Additional resource:

Heirloom Seed Library 2019 and Seed Saving Instruction Guide.
https://s3.wp.wsu.edu/uploads/sites/2083/2019/01/Seed-Catalog-2019.pdf

Clinic Schedule

WSU Master Gardener volunteers are available to address home gardening questions all year long. You may contact a WSU Master Gardener volunteer by calling or bringing your questions or samples to the WSU Grant Extension Office at 1525 E. Wheeler Road, Moses Lake, Monday-Thursday, 8 AM – 5 PM (509) 754-2011, Ext 4313, or by sending questions to the following website: ga.mgvolunteers@wsu.edu. Messages sent or called in or samples brought in will be answered by the Master Gardener volunteers 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 the Master Gardener volunteers at one of the following locations:

- **Othello Ace Hardware:** 420 E. Main Street, last Saturday of each month, May through September, 9 AM - Noon
- **Moses Lake Farmers Market:** McCosh Park – Dogwood St. side, Saturdays, May through October 8 AM – 1 PM
- **Quincy Farmers Market:** Lauzier Park, 1600 13th Avenue SW,1st and 3rd Saturdays, June through September, 8 AM – 1 PM

For help with diagnosis and identification, plant and insect samples can be dropped off at the Extension Office Monday through Thursday, 1525 E. Wheeler Road, Moses Lake, from 8 AM – 5 PM