GROUNDED

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INSIDE THIS ISSUE

THE EPIC SQUASH BUG BATTLE . . . *by Kris Nesse*

My husband and I gardened close to the Canadian border for almost 40 years. The only problem we had with squash (summer or winter varieties) was one of overabundance. In 2009 we retired back to the Columbia Basin and continued gardening. In 2011, in our second gardening season, our lovely zucchini plants inexplicably started wilting and dying. On close inspection, many "stink" bugs were detected. We had these annoying but harmless pests up north. They never even bothered with the garden. It was clear that the squash plants were goners, so I pulled them up and destroyed them. The straw mulch and ground beneath literally teemed with thousands of grey nymphs. Horrified, I boiled huge kettles of water and employed a medieval tactic to destroy the invaders.

Needless to say, research ensued. These 'stinkbug' look-alikes, were really squash bugs (*Anasas tristis)*. In 2012, noting that zucchini were particularly susceptible to the pests, we grew only winter squash and located them in a separate garden area. We tried to capture and destroy any bugs, adult and nymph stages, as well as checking frequently for the masses of football shaped, bronze eggs tucked in the crook of two leaf veins on the underside of the leaves. We squished any eggs detected. Alas, the vines spread and it became very difficult to check well. Eventually, the squash bugs won the skirmish of 2012.

Adults mating

Immature bugs and nymphs

Source: Photo credit - Utah State University Extension

Realizing that knowing and understanding one's enemy helps in any battle, we studied the life cycle of the pest. Squash bugs feed on summer and winter squash. They are not much interested in other curcurbit relatives like cucumbers and melons. In the winter, unmated bugs find shelter in garden debris, rocks, wood, etc. As spring approaches, they fly to their target curcurbits, mate, and lay eggs on the underside of leaves. These hatch in 5-10 days. Nymphs grow through stages, molting and increasing in size, until they are adults. Bugs often shelter at the base of plants for the night.

Both the young nymphs and the adult bugs suck plant juices from leaves and stems of developing plants. Loss of nutrients and water causes leaves to speckle, later turning yellow to brown. Heavy feeding causes plants to wilt. While this resembles bacterial wilt, it is a direct result of feeding damage rather than a pathogen. In recent years, though, some reports of curcurbit yellow vine disease (caused by a bacterium transmitted by the squash bug) have been reported.

Armed with knowledge, we resolved to use almost every integrated pest management strategy short of chemical control (we garden organically) to defeat our nemesis during the 2013 gardening season. These methods are basically cultural in practice.

- *Sanitation/rotation:* We clean up carefully each fall. Rubbish and debris are perfect overwintering hideouts for squash bugs. We also rotate crop varieties.
- *Trellising:* Squash up off the ground are less vulnerable to infestation and are easier to check for eggs and nymphs. We chose a vining summer squash called Trombetta and planted along an eight foot garden panel in a raised bed. For good measure, we surrounded the squash row with onions (both sides), cilantro, and even lemon basil just in case such smelly varieties might throw off the enemy.
- *Trapping:* Based on the squash bug's penchant for hiding during the day, generally at the base of plants, wooden boards were placed beneath plants in an attempt to trap the pests. Not a single adult or nymph was ever found under the boards in our garden.
- *Handpicking:* Once the seeds germinated (early June), we began daily inspections of the undersides of leaves. Because the vines were trained up the fence panel, it was a much easier task then for on-the-ground hills of squash. Egg masses were first detected when plants were about a foot high. It's fairly easy to squish these, though one experienced gardener said that she cuts the mass out with cuticle scissors. It was interesting to note that once a leaf had been used to deposit eggs, it was not used again. (This may be entirely circumstantial and will need replication to confirm.) Several adults were also handpicked and destroyed, with only one hatch of nymphs noted and destroyed. By mid-July no egg masses were detected and we began spot checks rather than daily inspection of each leaf.

We celebrated harvest of the first squash from lovely, healthy vines on July 20, 2013, and felt victorious! Unfortunately, we celebrated a little early. In early August, even with continued spot checks, one of the vines began yellowing and wilting. We've pulled and destroyed the vine and stepped up egg inspections. While trombetta are not as productive as zucchini, we still had squash bread to freeze.

The battle will continue in 2014. We may consider additional tactics in this epic quest to outsmart the squash bug:

- *Transplants rather than direct seeding:* Seedlings and smaller plants are more susceptible to squash bug damage. In addition, the less total time curcurbits spend in the garden, the less time for squash bug densities to build. We'll try this next year.
- *Resistant varieties:* Butternut, Royal Acorn, and Sweet Cheese are more resistant to squash bugs.
- *Biological control:* The parasitic tachinid fly lays its eggs on squash bugs. Ground beetles have been found to reduce populations of adult bugs, and predatory damsel and big-eyed bugs feed on nymphs.
- *Chemical control:* While some research indicates that organic-approved insecticides show only spotty success, neem and pyrethrum formulations may help, and applications of these chemicals along with diatomaceous earth around the base of the plants have allowed some control in trials. Any chemical control, from less to more toxic products, needs to penetrate the entire plant canopy, including under leaves, to achieve control. Many of these materials have negative impacts on bees and other beneficial insects, and are not likely to give better control than handpicking. Please always read and follow label directions!

References:

http://www.extension.org/pages/63329/managing-squash-bugs-in-organic-farming-systems#.UgZCnhZq2lU
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http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74144.html
http://extension.usu.edu/files/publications/factsheet/ent-120-08.pdf

Growing Tomatoes When the Weather Is HOT! . . . *by Cynthia Calbick*

So what's the impact of really hot weather on tomato plants and production?

Stress, stress, stress - daytime temperatures consistently above 90°F or nighttime temperatures consistently above 75°F create all kinds of stress for tomato plants. It's too hot for tomatoes to be pollinated, so blossoms fall off the plants. That means fewer fruit.

Even more worrisome is the toll the heat takes on the plants themselves. Heat stress forces a plant to increase transpiration (pumping water through its system) to survive, especially when the heat continues for prolonged periods. Heat stress not only slows down your plant's progress in producing, but it also makes your plant more vulnerable to diseases and pests.

Heat wave results:

- Tomato blossoms won't open
- Pollen is destroyed by the heat
- Fruit less likely to set until normal temperatures resume
- Leaves curl
- Plants concentrate on simply surviving
- Plants are more susceptible to disease and insects
- Plants may be unable to move sufficient water to its blossoms, leaves and fruit

The most important question to ask is: "Why do we grow tomatoes?" Answer: Because we love the fresh garden tomato flavor. Don't give up even if the weather is hot. Here are some things you can try to prevent or reduce tomato stress. OR you can simply wait until it is cooler, knowing that home-grown tomatoes are worth the wait!

1. Grow varieties suited to your climate. Look at the table below for possible choices for Eastern Washington growing.
2. Keep plants watered.
3. Make sure your tomatoes are getting more than their fair share of water. Don't forget – their transpiration rate is up. They're trying to survive. When temperatures are extremely high, that is, above 90°F every day, water plants one or two times a day. But avoid water logging and killing the plants.
4. Give plants shade if needed. If your garden gets too much sun, then you can provide shade for your tomato plants. You can use many different materials to shade them. The most common to use is shade cloth – a specialized fabric set over a structure or set on supports that drapes over plants, especially during the hottest hours of the day, from 11 am – 3 pm.
5. Keep existing plants healthy before a heat wave begins. Fertilize appropriately. Control insects and diseases. Watch for the signs of stress and eliminate as many as possible.

Try one or more of these Eastern Washington favorites:

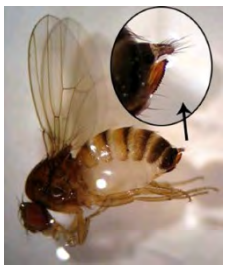
Cherry Tomatoes	Yellow Tomatoes	Paste Tomatoes	Traditional Size Fruit
Sweet 100	Yellow Pear Cherry	Viva Italia	Ace, determinate, ripen over short period
Sweet Million	Husky Gold	Roma VF	Siberian, determinate
Grape	Lemon Boy	San Marzano	Santiam, determinate
			Oregon Spring, determinate, early
			Early Cascade, determinate, may become limited
			Rutgers, determinate VFA
			Better Boy, large, indeterminate
			Big Beef, large, indeterminate, VFNAT
			Champion, early, indeterminate
			Early Girl, early, indeterminate

Don't give up on your favorite type of tomato plants. If they have given you the tomato you love, plant it. Then try a new flavor or type as well.

References: Fitzgerald, Toni, *Gardening in the Inland Northwest*. WSU Extension MISC0304. http://www.tomatodirt.com/too-hot-for-tomatoes.html. Kemble, J. M., Extension Vegetable Specialist and Associate Professor, Alabama Cooperative Extension System, TISVS-29-Mar-04.

Pest Sightings Causing Buzzes Among Us

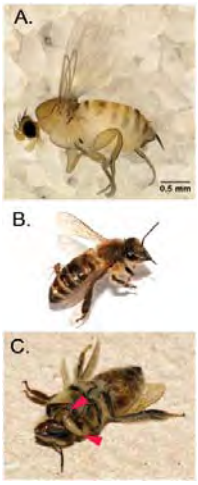
Editor's Note: The following pests have been spotted in western Washington or Oregon. Fortunately, there pests have not yet been observed here in eastern Washington. If they are reported in our area or if you find an unidentifiable insect, contact a Master Gardener or the identified WSU extension specialist in the table below.

Pest	Discussion	Damage	Sightings	Contact Information
Spotted Wing Drosophila Fly  Spotted Wing Drosophila, male with wing and leg spots  Spotted Wing Drosophila, female with large ovipositor. **Photos from University of Illinois**	According to Carol Miles (WSU Vegetable Horticulturist, NW WA Research and Extension Center in Mt. Vernon), monitoring Spotted Wing Drosophila (*Drosophila suzukii;* SWD) started with 14 cherry varieties in the research orchard at WSU-Mount Vernon NWREC this spring 2013. SWD was found in 2 of 12 traps after the first week of monitoring on May 21. Fruit was sampled starting at the "first pink" stage, and the first larvae were found in two varieties picked on June 18. Around July 5, SWD larvae were present in 12 of the 14 varieties. The first adult SWD hatched from fruit picked on June 4, when fruits were unripe but past "first pink". Once this study is complete, more definitive results will be released.	Potentially damaging to many berry varieties.	Additional SWD sightings (which consisted of maggot-ridden fruit) were found in pie cherries at two home gardens in Snohomish County in July 2013. In past years, SWD occurrences have come to WSU plant clinics in Snohomish County via blueberries, raspberries, blackberries, and salmonberries.	Contact Carol Miles at the Extension Center at Phone: 360-848-6150 Fax: 360-848-6159 or Email: milesc@wsu.edu http:\\vegetables.wsu.edu Contact Dave Pehling, WSU Extension, Everett for details or for sightings at Phone: 525-338-2400 Fax: 425-3383994 or Email: pehling@wsu.edu http://snohomish.wsu.edu http://gardening.wsu.edu
Japanese Beetle  **A Menace Waiting to Happen** Photo: Randy L. Rasmussen	The Japanese beetle is an iridescent green and brown and is about the size of a thumbnail. Dave Pehling, WSU Extension in Snohomish County, recommends keeping a lookout for the Japanese Beetle. Apparently, there are populations that arrive on planes that use the King County airport, though no 'wild' populations have been discovered in Washington yet.	The Japanese beetle is a very invasive species and threatens 300 plant species in Oregon, including roses, berries and fruit trees. Japanese Beetles threaten Oregon's agriculture and nursery industries.	It has large, established populations on the East Coast and is steadily moving west.	If you find a suspect, collect it, freeze it, get it identified, and send it to WSDA (http://agr.wa.gov/PlantsInsects/InsectPests/Exotics/) Call 1-877-9-INFEST to report a pest! http://www.oregonlive.com/environment/index.ssf/2013/07/japanese_beetles_threaten_oreg.html

Pest Sightings (Continued)

Pest	Discussion	Damage	Sightings	Contact Information
Gall Midge  Gall Midge larvae  Gall Midge/daylilies Photos: Vincent Alvarez, WSU Whatcom County Extension	Beginning in July 2013, Hemerocallis (Daylily) Gall Midge was found in the larval stage and had begun infesting flowering daylilies. All of the reports to date are from the Puget Sound counties. However, the insect is expected to move around on plant material as people split up their overgrown daylilies and share them with family and friends. Recommendations are to keep a lookout for new infestations! For those of you that like to eat daylily buds, make sure you look inside the buds before you sauté!	Compromises daylilies.	The daylily midge was introduced from Greater Vancouver area in Canada and into Whatcom County. It was also found on the peninsula of Washington State.	To learn more visit: http://whatcom.wsu.edu/ag/homehort/pest/C_quinquenotata.htm Contact Todd Murray, WSU Extension, Whatcom County, Washington, http://whatcom.wsu.edu/ag/homehort/pest/C_quinquenotata.htm WSU Extension HortSense website has recommendations: http://pep.wsu.edu/hortsense/scripts/query/displayProblem.asp?tableName=plant&problemID=784&categoryID=1
European wool-carder bee  Photo: Kathy Keatley Garvey, Agriculture and Natural Resources Department, University of California, 2010	According to Linda Chalker-Scott, WSU Extension Urban Horticulturist, Puyallup, the public should be the lookout for the European wool-carder bee (Anthidium manicatum). It originated from Europe and showed up on the east coast before 1963 and as recently as 2007 in California. It is apparently similar in color to a wasp or yellow jacket even though it is a bee.	It is unknown whether this recent invader will seriously impact our native bees or honey bees.	It has been seen near Kent and Granite Falls in western Washington this year.	Here's info from the University of California's Garden Web page: http://ucanr.edu/sites/gardenweb/?blogstart=8&blogtag=Anthidium+manicatum&blogasset=42184
Bumble Flower Beetle  Adult Bumble Flower Beetle Photo: Utah University Extension Cooperative	The bumble flower beetle gets its name based on the noise it makes as it flies. It buzzes just like a big bumble bee. But, it is a large scarab beetle measuring about a ½ inch. The head and pronotum are black, while the elytra on the dorsal side of the abdomen are dark brown with irregular black markings. The underside of the beetle is all black with a yellow pubescence just like a bumble bee. Few management options are available, except for picking them off. The most effective measures are directed towards the immature grub stage of the bumble flower beetle, but no one has complained about the grub damaging their garden yet.	Homeowners and gardeners sometimes get concerned when they see the adults feeding on sunflowers, thistles, daisies, and other large flower heads. They feed mostly on flower pollen and nectar, but may consume and damage flower tissues as well.	According to Mike Bush, Entomology and Pest Management Specialist, WSU Extension samples of the Bumble Flower Beetle, Euphoria inda, come through the Yakima Extension Office nearly every August. All the recent finds of the adult have been made in August and September	http://extension.usu.edu/files/publications/factsheet/bumble-flower-beetle2011.pdf http://bugguide.net/n(bushm@wsu.edu) ode/view/2711

Pest Sightings (Continued)

Pest	Discussion	Damage	Sightings	Contact Information
Parasitic Fly 	A parasitic phorid fly referred to as Apocephalus borealis is ordinarily a parasitoid of yellow jackets and bumble bees but, apparently, has just recently made the jump to the non-native honey bees as hosts.	It began emerging from honey bees collected in the Lynnwood area in mid July 2013. It is unknown if this native parasitoid is going to be a serious problem for beekeepers.	The distribution of parasitized honey bees in Washington is unknown.	Additional information and images are at http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0029639 Contact Dave Pehling, WSU Extension in Snohomish County mentioned above.

(A) Adult female *A. borealis*. (B) Female *A. borealis* ovipositing into the abdomen of a worker honey bee. (C) Two final instar larvae of *A. borealis* exiting a honey bee worker at the junction of the head and thorax (red arrows).doi:10.1371/journal.pone.0029639.g002 (Photos and caption from: Runckel, et. al., California State University Program for Education and Research in Biotechnology, 2012

Trees You'll Never Want to Plant . . . *By Barbara Guilland*

They are like viruses and bacteria. Their millions of seeds are spread by humans, birds, and the wind. They are hardy and drought tolerant. They infect the landscape costing millions, probably billions, of dollars to control on farmland, streams, and countryside in most states in the American West. People first brought them to the North American continent either as ornamental or practical use plants. They were seen as attractive quick growing windbreaks, protection against erosion, and good habitat for wildlife in the dry west. I'm talking about Siberian Elm, Russian Olive, and Tree-of-Heaven (ailanthus altissima), which was added to the 2013 Noxious Weed List of Grant County. They dominate many a landscape. Their spread is the unforeseen consequence of good intentions.

Siberian Elm (Ulmus pulmila) - You only have to go as far as the Civic Center Park in Moses Lake or the east end of Marina Drive for Siberian Elm specimens. They are drought tolerant and hardy, but prolific in ways you can't imagine, carpeting the land with seeds in the spring and sprouting in every damp corner. It is a very hardy, fast-growing tree with brittle wood that is subject to breakage. It is also extremely susceptible to insect, disease, and herbicide damage, which makes it an undesirable tree for most landscapes. Hundreds of thousands of these trees were planted in the Dust Bowl during the 1930s depression as a way to hold the soil in place in the dry Midwest.

Elm. Photo: North Dakota State University

Control - Hand pull when you see them in flowerbeds and along sidewalks. They can grow into 70 foot trees. If the seedling has grown too large to pull, it can be cut off close to the ground and the cut treated with shrub and brush killer. This is called the cut-stump treatment. For larger trees, the most effective method of control is to girdle the tree between late spring and mid- summer, taking care just to remove

the outer layer of bark. Girdling will deprive the tree of nutrients and it will slowly die within 1-2 years. Larger trees can also be cut down, but cutting through the entire trunk will often trigger re-sprouting below the cut, and the re-sprouts must be repeatedly removed for several years. For current chemical or biological methods, consult your local state or county weed specialist.

Elm seedlings
North Dakota State University photo

Russian Olive (Elaeagnus angustifolia)

The Russian Olive tree is now considered by many to be a noxious weed. This tree, which was once distributed with government approval, is now systematically being eradicated amid evidence that the tree is crowding out native plants while altering native habitat and wildlife. Russian Olive trees are native to parts of Europe and Asia. The trees were first imported to the US in the early 1900s for erosion control and windbreaks and for "wildlife enhancement" purposes. The trees were popular for windbreaks and erosion control in places like Montana and North Dakota where the wind is relentless and drought is frequent. Russian Olive trees grow and even thrive where few other trees can be made to grow. In the relatively short time since the tree was introduced to this continent, it has spread to much of the western US, several Midwest states, and three Canadian Provinces.

Seedling photo - Dept of Planning and Geography, Appalachian State University

Control - Prevent establishment. Small plants and seedlings can be hand-pulled, especially when the soil is moist. Herbicide treatment is probably the best method for eradicating larger, well-established plants, as cutting only stimulates sprouting and leads to thicker growth. Herbicide options include cut-stump and foliar applications. A cut-stump treatment is done by cutting the trunk of the tree near the base and applying (painting) a 10- to 20% solution of glyphosate-based herbicide to the cut area of the stump. The herbicide is absorbed into the roots where it kills the plant. A foliar application of a one- to two-percent solution of glyphosate should eliminate smaller patches. A late summer application is recommended for both herbicide treatment types. Use herbicides responsibly and follow manufacturer's label directions.

Tree-of-Heaven (ailanthus altissima)

The Tree of Heaven is an introduced weed tree that is a common problem in many areas of the United States. It has long been established in some urban and agricultural areas, and increasingly invades forests, displacing more desirable native trees. It is a fast growing tree with smooth gray bark, which attains a height of 80 feet or more, and a diameter of more than 3 feet. It has long compound leaves, with leaflets that are smooth-edged except for 1-3 teeth near the base, each with a small gland on the lower surface. In the winter, the tree is distinguished by the gray stems with stout, blunt brownish twigs, and by the clusters of twisted papery seeds, which often hang on the trees over winter. It has a strong disagreeable odor, especially the male flowers and cut or bruised foliage.

Established tree and seedling stages. Photos by Barbara Guilland

Tree-of-Heaven was imported from Taiwan and China to Pennsylvania and New York as an ornamental tree and was available in commercial nurseries beginning in the 19th century. It was also introduced into California during the Gold Rush of the mid-1800s probably because of its medicinal and cultural importance to Chinese workers. The USDA Plants database provides a map of Tree-of-Heaven's distribution in the United States.

More than a century after the North American introductions, Tree-of-Heaven is still most common in its initial centers of distribution: the Northeast and California. In the West, Tree-of-Heaven is common throughout much of California and is locally common in Oregon and Washington, including Grant County, WA, where it is now classified as a noxious weed. It grows along waterways in the Pacific Northwest, including banks of the Snake and Columbia rivers and the fence lines in my neighborhood in Moses Lake.

Control - Hand pull seedlings when found on the edge of gardens and grass. Larger shrubs can be treated with the cut stump treatment mentioned for Russian Olive and Siberian Elm.

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Russian Olive Reclamation and Control -- Montana NRCS (United States Department of Agriculture Natural Resources Conservation Service) – Online Date Accessed: August 10, 2013
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Rewards of Gardening With Children —Though Now What? . . . *By Jeanette Hopkins*

If you work with children or you have children at home, many times planting green beans and sunflowers is a gardening activity that stops before reaching harvest. Children, parents, or leaders then sometimes think once the garden is planted, "Now what?" Some youth continue with their garden projects that can provide nutritious vegetables and opportunities for family time. But other leaders/parents are left caring for gardens alone as children finish some other planned program or lose interest just as harvest is beginning.

Finding or creating the right activities for a garden project may be the key to keeping kids involved and excited. Remember to calculate in the time for swimming lessons, camps, and vacations. Summer is over quickly and school is ready to begin before you know it. As the adult, be sure to consider your personal time. It is frustrating to try and balance your own commitments with a project that might be more time consuming than originally estimated.

Analyzing the age group you are working with, whether toddler or teen, is a key to success. Questions to ponder include: what are the children's attention spans? And, for older children, what is their realistic commitment time?

Finding the interest level is another key component. I am speaking from seven years experience working with over 200 K-12 students through the 21st Century Community Learning Center program in the Grand Coulee area and with 4-Hers in Douglas County. For instance, 10 year old Johnny may be very helpful building planters, planting vegetables, and eating the product. However, his interest in watering, weeding, and preserving may not be there at all. Involving him in small ways in activities that he is not as interested in will have better results if you don't insist that he perform daily care. Perhaps he can always make sure the watering cans are full, watch for pests on the plants, and identify those pests. Providing support and encouragement may go a long way to getting positive results.

Have teens? Food! It's an amazing motivator, but you probably already knew that. When it is time to amend soil, plant, water, cultivate and harvest, most teens like to work in groups. Socializing is key to teens, while being in the garden can provide great snacks at the end of the day! Again, the key here is determining interest. Some teens may be interested in historical or cultural plantings or creating projects with flowers. Others may be focused on soil testing, preserving food, entering items in County Fairs, donating to the local Food Bank or cooking. Focusing on gardens is a great way for high school seniors to perform community service. It might include planning a field trip to a Farmers Market or a large farm for a broader perspective. From the (volunteer) educator's standpoint, keep the work time short, and, once again, end the activity with a great snack. Green beans cooked three different ways was one of the most well-received snacks that I ever provided. Who knew?

This information is really an invitation to visit and really explore JMGKids, the Online Junior Master Gardener Program. This is a certified program with curriculum that leads to a Junior Master Gardener certificate. The site is also student interactive with recipes, gardening and composting tips, a wildlife program and one of my favorites, Literature in the Garden. Teacher and Student Guides are available in the Online Store area as well as many other items.

The project I was involved with last year was Creating a Back Yard Habitat for 3rd and 4th grade 4-H members. The projects included inviting beneficial insects or animals into your yard. Toads were the favorite!

A toad abode was created to provide another way to attract beneficial animals to the yard.

Firewise Landscaping Ideas . . . *by Diane Escure*

Did you know that fall (after leaf drop) is a great time to plant new trees and bushes? According to the International Society of Arboriculture, that's when weather conditions are cool and plants have time to establish their roots in a new location before spring rains and summer heat stimulate new growth.
So, if you're considering adding some plants to your landscape, maybe a shade or fruit tree, or a windbreak, or maybe some bushes, flowers or ground covers to include in your border, you might also want to consider choosing plants that may reduce your risk from wildfire. Fire-resistant plants do not readily ignite from a flame or other ignition sources. In the event of fire, these plants can be damaged or even killed, but their foliage and stems do not significantly contribute to the fuel or the fire's intensity.

Several factors influence the fire characteristics of plants, including plant moisture content, age, total volume, dead material, and chemical content.

Characteristics of Fire-Resistant Plants	Characteristics of Highly Flammable Plants
Moist and supple leaves	Contains fine, dry, or dead material within the plant
Little dead wood and tend not to accumulate dry, dead material within the plant	Leaves, twigs, and stems contain volatile waxes, terpenes (naturally occurring compounds in the cells of certain plants), or oils
Water-like sap; doesn't have a strong odor	Leaves are aromatic (strong odor when crushed)
	Sap is gummy, resinous, and has a strong odor
	May have loose or papery bark

Both native and ornamental plants can be highly flammable. One example you see planted throughout the Columbia Basin is the spreading or upright juniper, which is highly flammable due to its accumulation of old, dead needles and the volatile oils in its foliage. Other highly flammable plants include yews, brittlebrush, sagebrush, Leyland cypress, and conifers in general. A few conifers, however, are fire-resistant: Western larch (larix occidentalis), Ponderosa Pine (Pinus ponderosa), and Lodgepole pine (Pinus contorta var. latifolia), whose foliage is moderately resistant to fire.

Fortunately, there are many attractive fire-resistant plants for you to choose from that grow well in our area.

Examples of Fire-Resistant Ground Covers and Perennials

Ground Covers	Perennials
Carpet Bugleweed (ajuga reptans)	Sea thrift (armeria maritime)
Kinnikinick (Arctostaphylos uva-ursi)	Astilbe (astilbe cultivars)
Mock Strawberry (Dechesnea indica)	Sun rose (Helianthemum nummularium)
Hens and Chicks (Echeveria species)	Sedges (Carex species)
Snow-in-Summer(Cerastium tomentosum)	Daylilies (Hemorocallis hybrids)
Yellow Ice plant (Delosperma nubigenum)	Coreopsis (Coreopsis species)
Japanese Pachysandra (Pachysandra terminalis)	Campanulas (Campanula species)
Creeping Phlox (Phlox subulata)	Coral Bells (Heuchera species)
Creeping Thyme (Thymus praecox)	Hosta lilies (Hosta species)
Sedum or Stonecrops (Sedum species)	Red-hot poker (kniphofia uvuria)
Periwinkle (Vinca minor)	Evening primrose (Oenothera missouriensis)
Epmedium (Epimedium x discolor)	Penstemon (Penstemon species)
Speedwell (Veronica species)	Lupine (Lupinus species)
Dianthus, Garden Carnation or Pinks (Dianthus species)	Columbine (Aquilegia species)
Pink Pussytoes (Antennaria rosea)	Iris (Iris species)
Rock cress (Aubrieta deltoidea)	Blanket flower (Gaillardia varieties)
Wild strawberry (Fragaria species)	Yucca (Yucca species)
	Oriental Poppy (Papaver orientale)

Examples of Fire-Resistant Shrubs and Vines

Red-osier dogwood (Cornus stolonifera)	Currant (Ribes species)
Cotoneaster (Cotoneaster species)	Hardy shrub rose (Rosa species)
Creeping Oregon grape (Mahonia repens)	Spirea (Spiraea species)
Oregon boxwood (Pachystima myrsinites)	Snowberry (Slymphoricarpos albus)
Tall Oregon grape (Mahonia aquifolium)	Lilac (Syringa species)
Burning bush (Euonymus alatus)	Cranberry bush (Viburnum trilobum)
Mock orange (Philadelphus species)	Serviceberry (Amelancier alnifolia)
Sumac (Rhus species)	Weigela (Weigla florida)
Rose-of-Sharon (Hibiscus syriacus)	Russian sage (Perovskia atriplicifolia)
Honeysckle (Lonicera species)	Viburnum (Viburnun species)

Examples of Fire-Resistant Deciduous Broadleaf Trees

Big leaf maple (Acer macrophyllullm)	European mountain ash (Sorbus aucuparia)
Amur maple (Acer ginnala)	Honeylocust (Gleditisia triancanthos var.inermis)
Norway maple (Acer platanoides)	Kentucky coffee tree (Cymnocladus dioica)
Red maples (Acer rubrum)	Walnut (Juglans species)
Horse chestnut (Aesculus hippocastanum)	American sweetgum (Liquidambar styraciflua)
Birch (Betula species)	Crabapple (Malus species)
Common hackberry (Celtis occidentalis)	Aspen/Cottonwood (Populus species)
Eastern redbud (Cercis Canadensis)	Flowering Cherry (Prunus species)
Flowering dogwood (Cornus florida)	Chokecherry (Prunus virginiana cvs)
Beech (Fagus species)	Bur oak (Quercus macrocarpa)
Ash (Fraxinus species)	Mountain alder (Aluns tenuifloia)
	Willow (Salix species)

According to Rick Wentworth, Moses Lake Battalion Fire Chief, District 5, fire season begins in the Columbia Basin in early May and runs through October in typical years, although his district has fought fires some years in November. If you live in an urban/wildland interface, consider the location and spacing of your plants within your home landscape and surrounding area, because these areas are often surrounded by trees, shrubs, and grasses that can be very flammable. The idea is to create a defensible space to greatly reduce your chances of a wildfire reaching your home.

Decks and siding easily can ignite when plants that burn quickly and produce high heat are placed adjacent to the home. A burning plant or group of plants in front of windows can cause glass breakage allowing fire to enter the home. Reconsider planting highly flammable plants, particularly when bunched together, at home entry locations or close to the walls of your home.

A well-maintained lawn, as well as conservation grasses, clover, and bulbs, can be included in a fire-resistant landscape and serves as an effective fuel break. Noncombustible materials in planting areas around your house, such as rock, brick, and concrete, also provide a barrier to fire. Bark mulch, which is often used in home landscapes, can ignite, conveying a fire to your home. A combination of wood bark surrounded by decorative rock is less flammable than wood bark mulch alone, and will not scorch plants.

If you're interested in learning more about fire-wise landscaping, a Washington State Wildland Urban Interface conference, "Working Together", will be held September 25-26, at the Wenatchee Conference Center in Wenatchee. The interactive conference will discuss how to develop strategies to counter the wildfires that continue to destroy thousands of acres of our forests and shrub steppe and threaten the communities that live there. Development, declining forest health, noxious weeds, climate change, and declining federal funds all contribute to the increase in wildfires we are seeing in Washington State. The conference is sponsored by South Central Washington Resource Conservation and Development (RC&D) Council, Department of Homeland Security, National Association of RC&D Councils, The Nature Conservancy, and the International Code. Diverse speakers and experts from across the state and nation representing federal, state, and private sectors will share their viewpoints, challenges, and opportunities. The cost is $45 for both days. To register, go to www.scwrcd.org/wui.html.

References:

Firewise Landscaping Plant Materials, Paula Dinius, WA State University, Chelan County Extension, September 2012
Fire-Resistant Plants for Home Landscapes, PNW 590, Oregon State University, August 2006
Firewise Guide to Landscape and Construction, National Fire Protection Agency Brochure, No date
Trees & Woody Landscape Plants, The International Society of Arboriculture, Consumer Education Brochure, excerpted from Chapter 11, Washington State University, Master Gardener Training Workbook, Fall 2011

Editor's Note: This following article came to the Master Gardener program as a timely reminder and caution to every gardener out there:

Slug & Snail Bait: Keep Out of Pets Reach! . . . *By Kaci Buhl, Oregon State University*

Yes, even the kind with iron phosphate. A recent review of pet exposures reported to the National Pesticide Information Center (NPIC) found 56 cases involving 61 dogs that showed signs compatible with iron toxicosis after being exposed to iron phosphate baits. Those signs include lethargy, vomiting, and diarrhea. Most of the time, dogs had access to the area where baits were used or they got into products that were stored insecurely.

There was good news in the review of pet exposures. Exposures to the other kind of slug & snail bait, metaldehyde, fell from 209 in 2005 to 21 in 2011, a tenfold decrease! Metaldehyde is more toxic to dogs than iron phosphate.

- Always read and follow the label directions, even when the product is considered natural, organic, or less toxic than other pesticides.
- Store pesticides where pets cannot gain access. We heard stories about pets opening cabinets, knocking packages off high shelves, and digging up buried bait pellets.
- Don't create piles of bait.
- Pay attention to the amount applied. The labels are very specific.

References:

Dog poisonings from one slug bait down; problems from another up
http://www.oregonlive.com/hg/index.ssf/2013/05/dog_poisonings_from_one_slug_b.html

Bio-control Weed and Insect Management Control Options for Gardeners. . . *By Mark Amara*

Effectively Incorporating Bio-controls into Weed Management Strategies was a presentation made by Jennifer Andreas, Washington State University Extension, at the January 2013 Grant County Noxious Weed Conference. Bio-controls can provide a natural solution to weed management without using herbicides, cultural or mechanical controls.

According to Andreas, bio-controls are offered free-of-charge through Washington State University who also provides expertise to help determine if they are a viable option on a case-by-case basis. Bio-control funding is provided through the U. S. Forest Service. The advantage of bio-controls is the insects are ecologically desirable, they are mobile and easy to transport, are cost effective, and provide a long term weed control.

The limitations are that individuals need to be patient about their impact because they may take a long time to establish and show results, they may be subject to predators, may not establish well at all sites, there is a very slow approval of new agents and total eradication never is a reality. Bio-controls may work best where there are well established weed populations, in remote hard to access or relatively inaccessible areas that resist control by other means or in environmentally sensitive areas. Bio-controls are not recommended with new infestations or in small weed populations, in highly disturbed areas such as roads or traveled paths or in areas unfavorable for insects, on weeds with no approved agents. [However, there may be opportunities for bio-control use on small acreages with natural or native areas throughout Grant and Adams Counties].

As a standard, weed control alternatives should be part of an Integrated Weed Control Strategy and may include biological, chemical, mechanical, and cultural elements that may be enhanced by reseeding. Of particular influence are insects that feed on various knapweeds including weevils and a gall fly midge on Russian knapweed. On Canadian thistle, a stem gall fly is particularly effective. Foliage eating beetles or weevils can help control the riparian or wetland plant, Purple Loosestrife. Field bindweed, a hardy perennial is impacted by a tiny mite; St. John's Wart responds to establishment by a foliage-eating black beetle; Dalmation; Toadflax may be controlled using a stem boring weevil and Rush Skeletonweed may be controlled using a gall forming mite, rust fungus, gall midge, or moth.

Bio-controls are definite options for home gardeners, too. Annually, beneficial insects can be used in the yard or garden to help pollinate plants, limit the use of chemicals, and reduce the impact of damaging insects. Included in this category are ladybug beetles and lacewings which thrive on aphids and other soft bodied prey, praying mantids and assassin bugs which feed on a wide variety of insects, and ground beetles or soldier beetles which like caterpillars and soft bodied insects. Sources of these and other insects are available by checking the attached lists.

Pictured ladybugs come in a variety of colors and types (Art Antonelli, WSU Extension Entomologist). Western Green Lacewing picture by H. Riedl as part of the Art Antonelli, WSU Puyallup REC, PLS-84, 2003 Extension publication.

References:

Ambrosina, Mario. 2007 *A Pocket Guide – Common Natural Enemies of Crop and Garden Pests in the Pacific Northwest*. EC1613-E.Oregon State University Extension.
No date. *Beneficial Insects.* Washington State University Spokane County Extension. C177.
Kennell, Holly S. and George Pinyuh. No date. *Organic Pest Control in the Vegetable Garden*. Community Horticulture Fact Sheet #13. Washington State University Snohomish County Extension.
Minga, Heidi. No date. *Beneficial Insects*. Department of Natural Resource Sciences. Washington State University Cooperative Extension.

Plant This Fall to Attract Native Pollinators . . . *by Kris Nesse*

Fall is the perfect time to create pollinator-friendly space in your home garden. Providing patches of blooming plants is something we can all do to improve the environment for native bees and other pollinating insects like butterflies. Native plants are undoubtedly the best source of food for bees, and October is the time to get them installed.

These fascinating and beautiful insects move pollen between flowers, ensuring the growth of seeds and fruits. Pollinators touch our lives every day through the food we eat. Some tips to get started include:

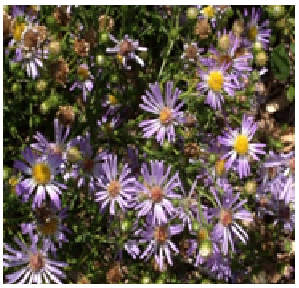
- Use local native plants
- Choose several colors of flowers
- Plant flowers in clumps
- Include flowers of different shapes
- Have a diversity of plants flowering all season

Grant-Adams Master Gardeners and other volunteers installed a demonstration garden on the C Street side of the Ephrata Community Garden this year. In early August, pollinators worked busily, enjoying the welcoming blooms.

Ornamental Onion (Allium "Millennium") & garlic chives

Missouri Goldenrod (Solidago missouriensis)

Joe Pye Weed (Eupatorium app.)



Western Aster (Aster Occidentalis)

For more pollinator conservation information, go to www.xerces.org.

Save These Dates and Mark Your Calendars for Selected Events, Activities, and Festivals

Now - October	First Fridays 4-5 pm	Educational Presentations at Ephrata, Soap Lake, and Moses Lake Community Gardens, with Master Gardeners on-hand with season appropriate gardening tips and answers to gardening questions.
Sept	10-13 11 25 26-28	Adams County Fair, Adams County Fairgrounds, Othello Master Gardener Training, starting Sept 11th, Wednesdays through December 2013 Master Gardener Training lab – Soils WSU Education Master Gardener Conference, Everett
Oct	9 23	Master Gardening training lab – Orchard Field Tour Master Gardening training lab – Fruit Production and Insect Identification
Nov	6 20	Master Gardening training lab – Vegetable Gardening Master Gardening training lab – Weed Identification

Master Gardener Plant Clinics:

- Moses Lake Farmers Market, Saturdays, through October, 2013, 8-12 noon in McCosh Park, Moses Lake
- Grand Coulee Farmers Market, First Saturdays: through September 7, 2013, 9-1 PM, on Morrison Street across from Safeway, Grand Coulee
- Ephrata Farmers Market, Saturdays, through September, 2013, 8-12 noon in Rock Park, on Division Street, Ephrata
- Othello Farmers Market, Saturdays through September 7, 2013, 9-1 PM, in Pioneer Park, Othello