



GROUNDED

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Is Wildfire Smoke/Ash Good For Garden Plants? . . . *By Diane Escure*

With increasingly large wildfires occurring in the western United States over the past few years, scientists have been looking at the effects of wildfire smoke on plants and crops. Researchers have found both good and bad results.

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PLANT CLINICS

Smoke from wildfires acts as a cloud cover, protecting crops from harsh temperatures and the direct impact of the sun's ultraviolet rays. When scientists measured the total amount of sunlight available to plants from smoke-filled skies, they found sunlight decreases only about 4%. Instead of blocking light, the smoke scatters and diffuses light by about a third. Under clear skies, direct sunlight falls mainly on upper foliage, with lower leaves shaded. Under hazy skies, diffuse light reaches more photosynthesizing leaves throughout plants, which the plants can use more efficiently. While wildfires increase ozone in the atmosphere, which negatively affects plant growth, diffuse light can increase photosynthesis efficiency, particularly for taller plants like corn or plants with a lot of leaf area, like alfalfa.

Although data may show some beneficial effects of fires on plants, smoke and ash can be bad for plants as well. Chemically, more than 100 different compounds have been identified in smoke, including toxic levels of nitrous oxide, sulfur dioxide, and ozone. Short-term exposure to smoke (as little as 20 minutes) has been reported to reduce photosynthesis by as much as 50%. As a consequence, chlorophyll is destroyed, and there is increased resistance to the movement of carbon dioxide (CO²) into the plant through leaf pores (stomata).

Ash from forest fires is actually considered organic matter. It is composed of many of the essential nutrients that plants require, including calcium, magnesium and potassium. If the ash accumulation from a fire doesn't bury a plant, the ash can act in small quantities as a fertilizer. In that case, plants covered from ash can be hosed down on their leaves and fruits. On the other hand, in large quantities, ash particles in smoke can damage plant growth by clogging the stomatal pores, with pores located on the upper surfaces of leaves more greatly affected than those on the lower-facing leaf surface. When ash lodges in a pore, not only is the intake of CO² retarded, but the pore can no longer function efficiently in preventing water loss from the plant, increasing the likelihood of the plant suffering from water stress.

To protect you and your plants when exposed to wildfire smoke and ash, here are a few steps to take:

- First, avoid gardening when outside air quality is unsafe (check the air quality at [AirNow.gov](https://www.airnow.gov)).
- Water garden plants well when smoke and ash are present.
- At least once a week, rinse off plant leaves with a hose, both from the top and underneath, to clean off particles.

Is it okay to eat fruits and vegetables that were grown during wildfires? Intense smoke can affect the taste of some produce, like grapes. Smoke and ash though won't likely penetrate deep into the fruit or vegetable. It is a good idea to use a hose or watering can to wash the produce once or twice outside and then wash produce again before eating. Another option for smoke-damaged plants is to peel produce, such as apples and tomatoes, and remove the outer leaves of greens. If in doubt, throw it out.

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Leave Lawns Higher in the Heat . . . By Mark Amara

Proper timing of lawn maintenance practices can be important to having a nice green yard. This year our summer has produced some sustained heat with the days hotter than hot. Consider the following reminders to keeping the lawn as healthy as possible.

We are in that part of the year at least through September when lawns grow at a relatively fast clip. Mowing seems to have the biggest impact on the life and quality of turf than almost any other practice. How high or low the lawn is cut varies with different turfgrass species. Lawns made up of a combination of Kentucky blue grass, fine fescues or turf-type perennial ryegrass do best when mowed at a height of 1.5-2.5 inches. Traditional lawn plantings often consist of 75% Kentucky blue grass and 25% fine fescue or perennial ryegrass, though knowing exactly what is there is the ideal. This type of lawn seems to withstand heavy foot traffic and fills in well after being damaged. However, these grasses also require weekly, if not more frequent, irrigations. Turf-type tall fescues require less frequent irrigations and may tolerate summer heat better than ryegrass or the bluegrass

Weekly mowing works best to maintain good quality grass during the greater part of the growing season. Mowing less frequently than once a week tends to produce lower quality turf. Regular mowing at the proper height takes less time and effort than infrequent mowing and produces a healthier, dense, and more vigorously growing turf that potentially has fewer maintenance challenges.

In the heat of the summer, consider cutting grass a little higher. What this means is that now and for at least the next 10 days to 2 weeks or longer if the heat persists, leave it longer each week. If it is cut too short, it will become stressed more quickly, which will weaken the grass. Longer turf helps to shade the soil and keep it relatively cooler, and it will need less water to stay green. And, keeping the grass a little taller, especially now, can help reduce weeds because the thicker canopy cover prevents seeds from germinating.

So, now you know, let it grow, let it grow, let it grow.

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Are Your Tomatoes Still Green? . . . By Duane Pitts

If your tomatoes are like mine, 90% are still green. I want ripe tomatoes now, and there are not 80 days for the new blooms to produce fruit by October.

What is a home gardener to do?

I researched the topic by looking at various university Extension websites. The basic message was to prune the lower branches and top off some of the higher ones to allow more air circulation and sunlight in. You probably already knew to do this as did I.

However, I did learn that tomato plants grow best in temperatures that range from 70-75°F during the day and between 60-65°F at night. This explained a great deal. Many plants shut down when the temperature rises over 90°F. We have had many, many days of temperatures 90°F and higher. No wonder my tomatoes did not want to ripen. Conditions were less than ideal with the heat. Your tomatoes probably did the same as mine: shut down. At the beginning of August, the tomatoes are green, except for the few small ones that turned mostly red.

What is a home gardener to do then?

Fertilizing would only add nitrogen for leaf growth, not for ripening. Giving plenty of water to my two German tomatoes and two Early Girl tomatoes is necessary to produce fruit, but will not ripen them alone. The temperatures have to be just right - like Goldilocks and the bowl of porridge! That was something this home gardener is not in charge of.

So, what is the answer?

First, make sure the plants are opened up for good air circulation and sunlight. That will not ripen them any faster, but it keeps away fungus and allows the plants to “breathe” freely and bask in the sun more.

Second, watering them about 1 inch a week allows them to grow fruit at a steady pace.



Two photos of my green tomatoes on July 21, 2021. Photo by Duane Pitts

Third, whether you grow tomatoes in the garden, in a raised bed, or in a grow box (as I am doing this year) matters very little if the daytime temperatures hit 90°F or higher. Pollinators quit visiting flowers when temperature hit 85°F or higher, so it makes sense that plants shut down around those temperatures as well.

Unless I learn how to control the temperature (globally, regionally, or in my little micro-climate garden zone), my tomatoes will ripen when conditions are better for them. I just hope they ripen before October comes around or I may have icicle tomatoes, which is a possibility the way the weather has been acting lately.

If by chance you learn to control the temperature and the weather please fill me in on your secret so I can get red tomatoes before Christmas. Okay? Okay!



A pruned tomato plant.



Clippings of tomato branches and tops from my 4 plants. Photo credits: Duane Pitts

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Using Native Penstemons in Your Garden . . . *By Barbara Guiland*

I sometimes try to imagine what plants early gardeners would have chosen first to grow in their gardens not for a practical reason, but rather just for their beauty. My first choice would have been a penstemon. According to *The Spruce* writer, Jamie Macintosh, more than 250 penstemon species (also called Beardtongue) are available for home gardens. The plants are herbaceous perennials that can range at maturity from 6 inches to 8 feet tall. They bloom in spring and early summer, prefer well drained and relatively infertile soils and full sun, and thrive in zones 3-8. The varieties have a spectrum of colors from white through purple. Whether mat-like (flat to the ground) or upright, all its flowers have five stamens, with one protruding out the lower end of the corolla, thus the common name, Beardtongue.



Penstemon venustus "Venus Penstemon" long-lived perennial, grown from seed. Very drought tolerant. 1-3 ft. tall, bright blue shades, locally common.

Spring at the Moses Lake Library drought-tolerant and native plant gardens always brings compliments from passersby because of the blooms in the native plant section. Most of the plants blooming in the photo are native penstemons, which appear in a variety of vivid colors.



The native plant garden at the Moses Lake Public library presently contains six penstemons that could be used in your garden.

Native plants are defined as those present in an area before plants were brought in from other areas. Native plants are already adapted to the climate and soil. For the most part, they require less water than non-natives, once they are established. They need less fertilizer and no pesticides because they resist native pests and diseases better than non-native plants. They will thrive in the soils, moisture, and weather of the region in which they are found.



Penstemon deustus "Hot Rock" - 12-18 inches tall

At least 50 plants are native to the Pacific Northwest, usually in the higher, drier portions of the Cascades, making many quite suitable to the Columbia Basin. Transplanting them successfully to your garden is a matter of choosing the appropriate plant. It is an opportunity to bring some of the beauty of the natural landscape to your backyard. The plants and seeds can be purchased from nearby native plant nurseries.



Penstemon barbatus "Elfin Pink" - 12 inches tall or less

Guidelines for Planting and Care: (From High Country Gardens Nursery)

- The plants like space, full sun, and heat. They do not like to be crowded by other plants.
- Plant in well-drained sandy soils. They do not do well in clay soils.
- Avoid enriched soil and too much fertilizer.
- They establish quickly, and the amount of water and frequency of watering needs to be reduced after 8 to 10 weeks to create dry conditions.
- If starting with a plant rather than seed, plant high to avoid burying the crown of the plant.
- Gravel or rocks make good mulch for penstemons.
- When pruning back seed stalks in the fall, allow some plants to set seed to create new plants. Most penstemons are not long-lived perennials but start easily from seed.
- Sow seed in the fall after temperatures have dropped to the 70s Fahrenheit.
- Fertilize sparingly, not more than once a year in the fall, using a light application of a natural slow-release fertilizer.



Penstemon eatonii “firecracker”
perennial, 1-3 ft.



Penstemon Palmerii, 3-5 ft.



Penstemon strictiformis, 2-3 ft.

All photos taken by Barbara Guiland

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Garden Design <https://www.gardendesign.com/perennials/penstemon>

Japanese Beetle - A Threat to Washington Agriculture . . . By Marylou Krautscheid and Mark Amara

Among the new invasive species that have found their way into Central Washington is a scarab beetle known as the Japanese beetle. It feeds on almost 300 species of plants as an adult and does even more damage as a larva. In its native Japan many natural enemies keep it in check, but not so in the United States, where it is a serious pest and a threat to all types of agriculture. First discovered in the United States in 1916, heavy infestations occur in the eastern United States and more recently, the Japanese beetle has moved to the west coast. As an adult, it travels via airplanes, trucks or trains; and as larvae it can come in the soil of potted plants, compost, landfill and waste.



WSDA photo

Washington has started annual surveys using traps to detect and eliminate populations so that they don't establish breeding colonies. Beetles have been found in Clark County, WA, which is next to a large population in west Portland, OR, as well as in King, Pierce, Snohomish, Spokane Counties and most recently in Yakima County. In 2020, the Washington State Department of Agriculture (WSDA) placed over 1600 traps throughout Washington and found one beetle in the Sunnyside area. Pheromone traps, consisting of a sex attractant and/or a floral lure to attract both males and females, can help determine the presence of adult beetles. WSDA is now conducting intensive trapping in the Grandview/Sunnyside area of eastern Washington. It is also providing training for residents to recognize, report, and control infestations on their properties. They are encouraged after watering begins to look for brown spots in the lawn and to peel back lawn to look for grubs. When beetles or larvae are caught, citizen scientists are encouraged to report sightings by calling 800-443-6684 or contacting WSDA at pestprogram@agr.wa.gov.

Beetle Lifecycle

Both adults and larvae (or grubs) of the Japanese beetle are destructive plant pests. Eggs are laid and grubs hatch by midsummer and begin to feed. By late fall, grubs overwinter in the ground and remain inactive through the winter. When spring arrives, they begin voraciously eating the roots of various plants and grasses until late spring when they become pupae, and finally adult beetles that emerge from the ground. The adult beetle feeds on the foliage and fruit of many fruit trees, ornamental trees, shrubs, vines and vegetable crops, leaving behind skeletonized leaves and large irregular holes in the leaves. Larvae are a white C-shaped grub, about an inch long with a brown head. Larvae spend about 10 months underground, while adults are only above ground a couple months.

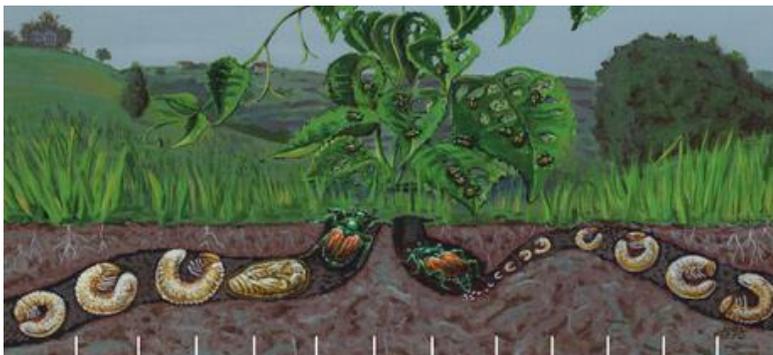
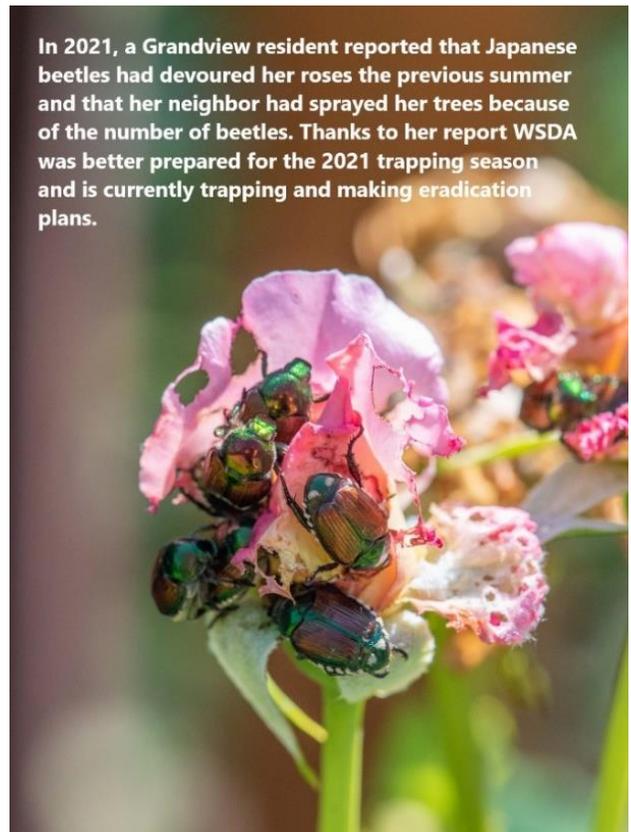


Illustration by APHIS employee Joel Floyd (USDA 2015: 4)



In 2021, a Grandview resident reported that Japanese beetles had devoured her roses the previous summer and that her neighbor had sprayed her trees because of the number of beetles. Thanks to her report WSDA was better prepared for the 2021 trapping season and is currently trapping and making eradication plans.

Image provided by Justin Bush, WRCO, Karla Salap, WSDA, Will Rubin, DNR 2021

Identification

The adult Japanese beetle is 1/3 to 1/2 inch long, has a metallic green head and thorax, copper-colored wing covers, and five white hair patches on each side abdomen, with two patches on the back end (agr.wa.gov/beetles). The beetle may seem easy to identify, although imposters, such as the blue milkweed beetle and the flower chafer, can complicate diagnosis.

Identifying Japanese Beetle – Imposters

Blue Milkweed Beetle
Chrysochus cobaltinus

Flower Chafer
Trichiotinus assimilis

JB

agr.wa.gov/beetles pestprogram@agr.wa.gov 1-800-443-6684

Photo credit David Cappaert, Bugwood.org 0005382014

A large population of beetles in the Washington State is dangerous for gardens, turf grass, grapes, hops, and many commercial agricultural crops. Beetles love roses and can ruin all the blossoms even though the plant may survive.

Eradication: One way to get rid of the beetles is to pick them off and dispose of them, but you can also just use a soap and water mixture on your plants to discourage them.

After watering begins on lawns, look for brown spots in the lawn, peel back the lawn and look for grubs. Commercial insecticides are available, but use caution not to kill beneficial insects.

For treatments, gardeners need to know if they are treating big grubs, eggs and little grubs, or adults because the treatments may be different.

- Look for grubs under the lawn in August of the preceding year before they become adults the next May and look for adults on plants May through early August.
- Preferably from May to mid-July, treat with a preventative control on lawn for eggs and little grubs.
- Apply a preventative pesticide before adult beetles lay eggs in July and August. Labels often say season-long control.
- In other months treat lawn with a curative pesticide. Curatives kill grubs on contact and are a good choice to apply for large grubs present from September to May. Labels often say Quick or 24-hour control.
- For all summer control, kill adults with label-specific pesticides and put insect into a bucket of soapy water (WSDA [Japanese-Beetle-WSU-Homeowner-Control-\(1\).pdf \(wa.gov\)](#)). Biological controls are also available, including applications of nematodes, *Steinemema glaseri* and *Heterorhabditis bacteriophora* or *Bacillus thuringiensis*, or milky spore which is the common name for the bacterium *Bacillus popillae* (USDA 2015: 9-10).

Other methods to help with control and/or eradication include habitat manipulation or establishing plants that deter the critters. A diverse population of different plants in the yard can help deter infestations. Below are some of the woody plants in our area that are resistant and susceptible to beetle feeding and some of the herbaceous plants that are resistant and susceptible to adult beetle feeding (USDA 2015: 13-15).

Woody Plants Resistant to Japanese Beetle	Woody Plants Susceptible to Japanese Beetle	Herbaceous Plants Resistant to Japanese Beetle	Herbaceous Plants Susceptible to Japanese Beetle
Red Maple	Japanese Maple	Columbine	Hollyhock
Redbud	Norway Maple	Larkspur	Dahlia
Dogwood	Apple and Crabapple	Foxglove	Hibiscus
Burning Bush	Plum	California Poppy	Common Mallow
Forsythia	Apricot	Hosta	Evening Primrose
Ash	Cherry	Impatiens	Rose
Holly	Peach	Violet	Grape
Juniper	Linden	Nasturtium	Sweet Corn
Sweetgum	Birch	Sedum	Clematis
Spruce	Hawthorn		Gladiolus
Pine	Beech		Sunflower
Lilac	Black Walnut		Peony
Arborvitae	Larch		Asparagus
Hemlock	Lombardy Poplar		Rhubarb
	Willow		Red Raspberry
	Mountain Ash		Zinnia

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WSU Master Gardener Volunteers are Community Educators

Since its formation in 1973, the WSU Master Gardener program has served as the go-to resource for communities throughout the state seeking research-based, innovative solutions for their ever-changing horticulture and environmental stewardship needs.

The program’s mission is to engage university-trained volunteers to empower and sustain diverse communities with relevant, unbiased, research-based horticulture and environmental stewardship education. Master Gardener (MG) volunteers promote environmentally sound gardening by providing public education for the control of plant and pest problems. They not only provide information on common-sense gardening but also answer questions from the public on integrated pest management, water conservation, composting, and home horticulture. Locally, in-person clinics for the public to seek answers to their gardening questions are held in Moses Lake and Quincy from May through October, and online clinics are also offered daily year-round.



ML Native Plant/Drought Tolerant Garden. Photo: Mark Amara



Soap Lake Healing Waters Garden. Photo: Mark Amara

In addition, local MG volunteers in Grant-Adams Counties maintain three drought-tolerant and native-plant demonstration gardens for public viewing and education year-round in Moses Lake, Soap Lake, and Othello.

To further identify the benefits of WSU’s Master Gardener program, the WA State Master Gardener Program formed a task force last year to identify its core values, which are presented below.

- We value personal and professional research and discovery because it encourages us to stay current about horticulture and environmental stewardship to meet the unique educational needs of our communities.
- We foster and benefit from an atmosphere of diversity and inclusivity because our differences inspire creative thinking and innovative solutions.
- We act with integrity because trust, truthfulness, and respect create a healthy and positive culture.
- We are committed to stewardship and sustainability serving as ethical and responsible agents of our natural resources, human resources, and University resources.
- We collaborate because together we empower healthy and resilient communities.
- We are a dynamic and responsive program where knowledge inspires change.



Othello Drought Tolerant Garden. Photo: Terry Rice

The Washington State Master Gardener Program has also identified several key priorities to address the following areas of concern in an ever-changing global environment: wildfire preparedness, climate change, clean water, water conservation, soil health, plant biodiversity, pollinators, nearby nature, and local food. MG volunteers will continue to receive science-based training in these areas and provide current information to the public.

WSU Master Gardener Program

Cultivating Plants, People & Communities Since 1973



WSU Master Gardener Plant Clinics - Bring your plant samples and gardening questions to:

- **Moses Lake Farmers Market**, Saturdays through October, 8-1 pm at McCosh Park on the Dogwood Street side.
- **Quincy Farmers Market**, B Street SE, Quincy. First and Third Saturdays. June through September, 9 am - 1 pm
- **Othello Fair**, 831 S Reynolds Road, September 15-18, 2021

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