July 2024-Vol.10,No.7

Table of Contents

The Edible Garden in July

By Ralph Morini | July 2024-Vol.10,No.7

As we enter the heart of the summer growing season, spring plants may already have finished, summer vegetables are in full swing and we increase our focus on moisture management, insect and disease issues and caring for idled beds. There is still time to plant warm weather crops like beans, cucumbers, eggplant, melons, okra, peppers, pumpkins, squash, corn, sweet potatoes and tomatoes. With an average first frost date for our new hardiness zone 7b of October 25 to November 5, pay attention to the time-to-harvest information of the crops you plant to be sure you give them enough time to mature before frost risk. Also, if you plan to make a fall planting, consider crop rotation and companion planting to reduce disease and pest risks. Finally, consider the sun blocking effects of tall and trellised plants based on the needs of the new crop plantings, that for better or worse, they may shade.

Check the Vegetable Harvest Guide from the Iowa State Extension for typical time from seed planting to harvest for common garden vegetables. For a listing of recommended planting and harvest times for hardiness zones 6a-8a refer to VA Cooperative Extension (VCE) publication Virginia's Home Garden Vegetable Planting Guide. (Remember that the VA Piedmont has been changed from zone 7a to 7b but the map in the VCE publication hasn't been updated yet.)

Planting time for fall crops like lettuces, cabbage family crops and greens begins in early to mid-August, so begin to prepare beds for those plantings. Remove spent plants. Compost them if not diseased and if they haven't set seed. Otherwise, it is best to dispose of them.

Screening compost. Photo: R Morini

If you started a compost batch in the spring, and kept it moist and aerated, it may be ready for use now. Screen it to separate fully and partly decomposed material. Put undecomposed material back in the bin, while scratching finished compost into bed surfaces, prior to planting, to give fall plants a boost. Organic fertilizers can also be added to beds prior to planting to give soil life a chance to make nutrients accessible to the new crops. Find basic fertilization info in the Garden Shed article A Fertilization Primer: Plant Needs, Fertilizer Choices and Application Tips.

Maintaining Plant Health

Rotating crops is an important priority to minimize disease and pest proliferation. A three-year cycle is recommended. Interplanting or mixing a diversity of crops into shared space is a good practice too.

Splashing soil onto plants during watering is a common mistake that can spread soil borne diseases onto crops. Water at the plant base, as gently as possible to minimize splashing. Watering early in the day gives vegetation time to dry, reducing risk of fungal disease. A light straw or leaf mulch can reduce soil splashing while helping to conserve soil moisture during hot, dry summer weather.

Advice for Tomato Growers

Tomatoes are a prized summer crop for many of us. It is best to support plants with stakes or cages. If you

use **stakes**, tie plants loosely to the stake with a soft twine or cloth strip. Add ties to give support as plants grow and fruits develop. Remove leaves that touch the ground to reduce susceptibility to soil pathogens. Allow up to two main stems and pinch off all other “suckers” that sprout at leaf/stem intersections. This focuses the plant on fruit production rather than vegetative growth.

Sucker at tomato leaf-stem joint: Photo: R Morini

Cages require more upfront investment and off-season storage space but reduce plant maintenance during the growing season. If you use cages, prune tomato plants to 3 or 4 main stems. The additional vegetation will help protect fruit from sun scald.

In all cases, remove diseased foliage with shears disinfected with a 10% bleach solution. Bag and remove it with your trash. As noted above, mulching helps maintain moisture, hold down weeds, and reduce soil splash during watering.

A more complete guide to growing tomatoes is provided in the VCE publication Tomatoes. If you have disease issues, check the Garden Shed article Tomato Diseases.

If you are having disease or pest issues, record the timing and specific issues in your journal. This info can help avoid repeat issues next season.

Summer Pests

Summer is the peak activity period for many garden pests. Get help dealing with common pests from the Garden Shed article Eleven Common Garden Pests: Identification and Management.

For more help identifying beneficial insects check the video Garden Insects: Friend or Foe, from the University of Georgia Extension.

More ideas to help maintain garden health during July:

- **Watering is** extra important in the hotter months, affecting overall plant health, and the taste and texture of many vegetables. The garden typically needs about an inch of water per week, more during very hot periods. Early morning is the best time to water: it gives leaves time to dry before dark and reduces susceptibility to fungal diseases.

Rain barrel hidden by viburnum. Photo: R Morini

- **Rain barrels** are a great tool for reducing summer water use. They can reduce runoff, conserve water resources, and reduce water/sewer bills. Natural rainwater is also better for plants than chlorinated water. Rain barrels are located alongside downspouts and connected via a pipe or tube. Rainwater passes from the gutter to the downspout and through a diverter that sends it to the barrel. When the barrel is full, excess rainwater is sent down the downspout. Rain barrel water isn't considered potable and can pick up pathogens from fecal matter on roofs, so should be applied to the base of plants, not sprayed on foliage. The benefits of rain barrels are discussed in the publication Rain Barrels in the Home Garden from the U of Minnesota Extension.

Stirrup hoe weed removal. Photo: R Morini

- It’s important to **control weeds** around vegetables because weeds can out-compete vegetable plants for nutrients, water, and sunlight. The best method of control is by mechanical extraction, meaning good old-fashioned weed-pulling or the use of a hoe. For small weeds, the **“stirrup” hoe** (also called “hoop” or “scuffle” hoe) is recommended because its shallow soil penetration removes weeds without bringing buried seeds to the surface where they can germinate. Its use is also easy on the knees and back.

Fusarium wilt of basil (Fusarium oxysporum f. sp. basilicum) Debbie Roos, NCSU Agricultural Extension Agent, Chatham County, NC

- **Fusarium wilt of Basil** is a fungal disease specific to sweet basil. The fungus attacks the water-conducting tissue (xylem) within the stem. Infected plants will grow normally until they are six to twelve inches tall, then suddenly wilt. The stem may become curved and develop brown streaks. The fungus can over-winter and survive many years as spores, ready to cause new infections in basil or other mint family members that are planted in infected soil. There is currently no fungicide approved for its treatment, but it can be controlled somewhat by removing diseased plants, rotating planting locations, and by planting disease-resistant varieties. Some resistant varieties include Aroma-2, Prospera and Obsession. Also, Lemon and purple basil varieties show resistance to the disease. Additional information is available from the UMD Extension publication Fusarium Wilt of Basil and from Garden Shed article Basil: Beautiful and Aromatic.
- **Cucumbers** develop a **bitter taste** if the soil is not kept **consistently moist. Leaf or straw mulch can** help maintain soil moisture.
- **Reduce potato watering when flowers mature. Pick them after flowering when the vines dry up.** Water and fertilizer may disturb the dormancy stage causing regrowth and may cause potatoes to crack. Great guidance for growing potatoes is available from this article from the Michigan State University Extension.
- Pests and diseases are very active during the summer. It is tempting to use manufactured chemicals to deal with them, but for environmental and health reasons we recommend following Integrated Pest Management principles in dealing with these issues. The Garden Shed article Integrated Pest Management provides good guidance.
- If you use **insecticides on vegetables** (we hope you don't), avoid spraying flowers and check

the label to understand how long to wait after application before safely harvesting and eating. Please avoid neonicotinoids which present high risk to pollinators.

I hope this information is helpful and that we can talk again next month as fall planting and soil care issues take the spotlight. Meanwhile, enjoy your July gardening tasks.

Sources:

Featured image: July Edible Garden, Photo: R Morini

Food Preservation: A Guide to Freezing Fruit

By Patsy Chadwick | July 2024-Vol.10,No.7

From late spring when the first sweet strawberries come into season through fall when juicy, tart apples are harvested, our local Virginia gardens are blessed with an abundance of fresh fruits. That's the good news. The not-so-good news is that many of the fruits we grow are highly perishable. They must either be consumed right away or quickly preserved before they lose flavor or spoil. Depending on how much time and effort it will take to preserve the bounty, freezing may be your best option.

Why freeze fruit?

A key reason for freezing fruit is that it's **convenient** to freeze now and then use the frozen product in recipes, like jams and jellies or desserts, **later at your leisure**. Freezing fruit is quick, simple to do, and requires no special supplies or equipment (other than a freezer). Unlike vegetables, which generally must be blanched (partially cooked) in hot water or steamed before freezing, fruits are usually frozen in their raw form.

Besides the convenience freezing offers, other reasons to freeze fruit are to:

- **Preserve flavor.** Fruits that are suitable for freezing should have a firm texture and well-developed flavor. In other words, they should be mature (well ripened). Freezing them as soon as possible after harvest preserves them at their peak of flavor.
- **Preserve nutritional value.** According to the Clemson Cooperative Extension's factsheet HGIC 3063 on *Freezing Fruits and Vegetables*, freezing is "the method of food preservation that preserves the greatest quantity of nutrients."
- **Avoid food waste.** Freezing extends the "shelf life" of fruits so that they can be used safely in a

variety of ways later on. Keep in mind that freezing does not sterilize foods, but it does retard the growth of microorganisms and slows down the chemical changes that cause food to spoil.

How do you prevent frozen fruits from darkening or turning brown?

Some fruits that are sliced for freezing, notably tree fruits such as apples, peaches, pears, and nectarines, darken or turn brown when the cut surfaces are exposed to air. Unless the fruit is treated to prevent discoloration, darkening may start to happen as the fruit is being prepared for freezing and becomes apparent as the fruit is thawing.

While sugar helps prevent fruit from darkening, an additional application of an anti-browning agent such as lemon juice or ascorbic acid (vitamin C) is also helpful. Ascorbic acid not only preserves the natural color of the fruit and its flavor but also adds nutritional value. It is readily available at most grocery stores or where canning supplies are sold. To learn more, see the North Carolina State Extension's publication on *Brief Instructions for Freezing Fruit*, which lists a variety of fruits and provides advice on how much ascorbic acid to use depending on how the fruit will be used.

What kind of containers should be used for freezing fruit?

To maintain maximum flavor, color, nutrients, and moisture content of fruits, it matters what kind of containers are used to freeze them. For fruits packed in syrup, juice, or other liquid, use rigid plastic containers or glass jars that are made for freezing and canning. Regular glass jars may break in freezing temperatures. For dry packed fruits with little or no liquid, plastic freezer-grade baggies work well. Leave a little head space for expansion but press the air out of the bag before sealing it.

What are some ways to pack fruits for freezing?

Most fruits yield better results if packed in sugar or syrup, which preserve flavor and texture. Other fruits can be packed for freezing without sugar or syrup.

- **Syrup Pack**: The syrup coats cut fruit and protects it from enzyme action that changes the fruit's color and appearance. To make syrup, dissolve sugar in water and mix until the solution is clear. The ratio of sugar to water depends on the sweetness of the fruit. Light syrup is generally desirable for mild-tasting fruits to prevent overpowering the taste of the fruit. A heavier syrup may be preferable for very tart or sour fruits. As a general rule of thumb, a 40-percent syrup works for most fruits. Chill the syrup before using it. Pour just enough syrup in the container to cover the fruit.
- **Dry Pack:** Plain, dry sugar works well for fruits that produce juice, such as strawberries or peaches. Simply sprinkle the sugar over the fruit and gently combine it until the fruit pieces are covered in sugar and juice.
- **Unsweetened:** Small berries such as cranberries, blueberries, raspberries, blackberries and currants may be frozen without sugar. **For small fruits such as these, the best way to freeze them is to spread them in a single layer on a tray small enough to fit in your freezer.** Make sure they are not touching one another. The goal is to freeze the fruits individually so that they don't clump together. Freeze the fruit only for as long as it takes to freeze solid. At that point, transfer it to freezer-proof containers and return it to the freezer. This technique allows you to remove as much of the frozen fruit as you want and return the unused portion to the freezer.

Individually flash frozen raspberries. Photo: Pat Chadwick

If you have a vacuum sealer, there's no need to add juice or sugar syrup. Simply treat fruits with fruit preservative to prevent browning. Freeze the individual fruit pieces on a tray, then place them in freezer bags and vacuum seal them.

Can I use a sugar substitute instead of sugar to freeze fruit?

Although sweeteners such as aspartame may be used as a substitute for sugar, the results will not be the same. The fruit may freeze harder and thaw more slowly than those frozen using a dry sugar pack. Sugar substitutes also don't typically keep fruit from darkening. Depending on your plans for the fruit, it may be preferable to freeze it unsweetened, then add the sugar substitute later when the fruit is ready to be served.

So, what are the steps for freezing fruits?

First, decide how you want to use the fruits after they are frozen. Will they be used whole, cut into chunks, sliced, crushed, pureed, or juiced? Your intended use of the fruits will determine how you prepare them for freezing.

The following are basics steps for freezing fruit:

- For best results, choose high quality fruits that are fully ripe. If the fruit has any damaged areas, cut those out.
- Place the fruits in a strainer or wire basket and rinse in cold water to remove any dirt or other debris. Drain thoroughly. Don't let the fruits soak in the water. To prevent bruising the fruit, it's best to wash small quantities at a time.
- Prepare the fruits using one of the methods described above (sugar syrup, dry sugar, or no sugar) as recommended for the fruit being frozen. If the fruit tends to turn brown, treat it with ascorbic acid or other anti-browning methods.
- Measure out the amount of fruit needed for a recipe. For example, it typically takes about four cups of sliced peaches to make a peach pie. Measure out that quantity for packing.
- Pack into freeze-proof plastic bags or other freezer-proof containers. Allow ½ inch of headspace for expansion. For fruits that tend to darken, keep them under the syrup by crumpling wax paper and placing it between the submerged fruit and the container lid.

How long can fruits be kept frozen?

According to the National Center for Home Food Preservation, most frozen fruits maintain their high quality for 8 to 12 months when stored at 0° F or lower. If stored longer than that, the quality of the fruits will decrease. Unsweetened fruits tend to lose quality faster than fruits packed in sugar or syrup.

What are some guidelines for thawing frozen fruits?

Fruits that are packed in dry sugar generally thaw faster than those packed in syrup. Fruits that are packed without sugar will generally take longer to thaw. Regardless of how the fruit was packed, always thaw it in the unopened container. Otherwise, the fruit may soften (or collapse) and darken in color if exposed to air while it is being thawed.

How you thaw fruit depends on how you plan to use it. For example:

- **Unthawed**: Fruits may generally be used straight from the freezer for baked goods such as blueberry crisp, raspberry pie, peach pie or for frozen desserts such as cherry or strawberry ice cream. If the fruits are frozen into one solid block, try partially thawing the fruit just to the point where the individual pieces can be separated from one another.
- **Partially thawed**: Fruits that will be used raw (uncooked) in a fruit cup, fruit salad or shortcake will hold their shape and texture better if they are only partially thawed.
- **Completely thawed**: Fruits that will be pureed or reduced to make sauces such as raspberry sauce to serve with cheesecake or blackberry sauce to serve with grilled duck or game should be completely thawed before they are processed.

Are there any drawbacks to freezing fruits?

- **Softened Texture:** While frozen fruits generally retain their flavor after freezing, the texture may be softer than it is for fresh fruit. That's because most fruits are largely made up of water held within the cell walls that define the fruit's structure and texture. If fruits are slowly frozen, large ice crystals form within the fruit's cells, causing them to rupture. However, rapidly freezing fruits produces a large number of small ice crystals within the cell walls. The small crystals do less damage to the cells.
- **Browning:** As discussed above, some fruits, particularly tree fruits, can turn brown when sliced and must be treated with an anti-browning agent such as lemon juice or ascorbic acid (vitamin C) before they are frozen.
- **Limited Freezer storage:** If storage space is limited, don't cram your freezer with more fruit than it can accommodate. As a general rule of thumb, this equates to about 2 to 3 pounds of fruit per cubic foot of freezer capacity. Allow space for air circulation between frozen food containers and keep the storage temperature at 0° F or lower.

In Conclusion

Freezing is one of the fastest, easiest, most convenient ways to preserve fruits. Although most fruits freeze quite well, results may vary depending on the quality of the fruit, how ripe it is, and how it is packed for freezing. To learn more about freezing fruit, check out the publications listed under Sources below. They provide additional details on specific fruits and the recommended freezing and packing methods for each.

FEATURED PHOTO: Pat Chadwick

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Wilts and root rots in the vegetable garden

By Chris Stroupe | July 2024-Vol.10,No.7

Picture this: It’s July. The heirloom tomato plants you purchased at the Piedmont Master Gardeners’ annual plant sale have been chugging along since you planted them in mid-May, after the soil warmed up and the danger of frost was over. You’ve staked them and pruned them to two main stems. You’ve mulched them with grass clippings and watered them every morning, taking care not to splash soil onto the leaves. And then one day you head out to the garden and your plants are yellow and as limp as if they’d never been watered.

Your tomatoes have succumbed to a wilt or a root rot. The symptoms are similar: Plants are limp and wilted as though they've been deprived of water, no matter how moist the soil is. Leaves may be yellowed. Plants may perk up overnight and wilt again in the heat of the day. Eventually, though, the wilt will become permanent.

Tomato plant (center) suffering from a wilt disease. Image: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org. CC BY-NC 3.0

Clogged vascular system of a plant suffering from a wilt disease. Image: Clemson University – USDA Cooperative Extension Slide Series, IPMImages.org.

The underlying causes differ. Wilts clog up the plant's vascular system – specifically the xylem, which brings water and nutrients up from the roots. Root rots, on the other hand, destroy the plant's root system, preventing the plant from taking up water and nutrients in the first place.

Different pathogens cause wilts and root rots. Wilts can result from fungal infection, most commonly *Verticillium* or *Fusarium*. They can also result from bacterial pathogens like *Ralstonia solanacearum*. Tomatoes are particularly susceptible to wilts, as are other nightshades like potatoes, peppers, and eggplants. Cucurbits like cucumbers, muskmelons, pumpkins, and watermelons are also prone to

wilts. Many other vegetables, including brassicas, alliums, beans, peas, beets, and asparagus are moderately susceptible to wilts. The characteristic sign of a wilt is discoloration in the plant's vasculature, easily seen if you cut across the stem (see picture).

Healthy (left) and Phytophthora-infected (right) blueberry plants. Image: University of Florida Institute of Food and Agricultural Sciences. CC BY-NC-ND 4.0

Root rots are caused by both fungi and related pathogens termed oomycetes, or water molds. The fungi include *Rhizoctonia* and *Fusarium* (a different variety than the one that causes vascular wilt). Water molds include *Phytophthora* and *Pythium*. Tomatoes, peppers, and eggplants are especially susceptible to root rots, as are many fruit trees. Root rots can be identified by pulling up an infected plant and washing the soil off the roots. Healthy roots are a light yellow-white color, whereas rotten root tissue is brown or black (see picture). *Pythium* affects the outer layers of the roots; a gentle pull will slide the damaged outer layer away from the healthy core. *Phytophthora* rot extends all the way through the root. *Rhizoctonia* and *Fusarium* cause a reddish-brown dry rot. Root rots may extend up into the lower stem and are sometimes termed crown-and-root rots.

Prevention

Keep root rots and wilts out of your garden. The pathogens are soil-borne and can survive in soil for many years. Once they are established, it's virtually impossible to remove them. Plant only healthy plants in your garden. If in doubt, remove the pot and examine the roots – it's OK to do this in a store! Wash soil off of tools before using them in your garden, especially if you've used them in a different location. For extra protection, sanitize tools with a 10% bleach solution after washing off the soil.

If a plant is affected by a wilt or root rot, remove it immediately. Once a plant is infected there's no way to cure a wilt or root rot. Don't compost it. Instead, dispose of it by burning (if it's legal in your community) or by burying it far away from your garden. If you like, send the infected plant to Virginia Tech's Plant Disease Clinic for professional diagnosis.

Fortunately, there are several strategies for preventing wilt and root rot pathogens from infecting garden plants:

- Don't over-water: soil-borne pathogens thrive in wet soil. Most vegetables need about 1 inch of water per week. This works out to around 2.5 quarts per square foot, or a little less than 5 gallons in a 3-foot diameter circle.
- Promote well-drained soil. Add organic matter, like well-aged compost, to your garden. Use no-till practices to preserve the organic matter already present in the soil.
- Plant resistant varieties. In particular, there are many tomato varieties that are resistant to certain soil-borne pathogens. Check the plant's label, or the seed catalog, for V, indicating *Verticillium* resistance, or F, for *Fusarium*. You might see one or more numbers after the F. *Fusarium* has 3 strains, or races, and different plant varieties have different levels of resistance to the various races. It might take some experimentation, a.k.a. trial and error, to figure out which pathogen, and which race, might be in your soil.
- Graft susceptible plants onto resistant rootstocks. Again, this is mostly applicable to tomatoes. Rootstock varieties are resistant to soil-dwelling pathogens but produce tasteless tomatoes. It's quite feasible for home gardeners to graft tomatoes, and the only specialized equipment you'll need are grafting clips. Purdue offers a fantastic written guide and video explaining the process.

Tomato grafting. Image (cropped): Cary Rivard. CC BY-SA 3.0

- Tidy up your garden at the end of the season. Scrupulously remove all plant debris from the garden, even if the plants didn't suffer from wilts or root rots. Pull up all stakes, cages, etc., hose them off, and store in a dry place.
- Rotate crops. Don't grow plants susceptible to these problems – especially nightshades – where other susceptible crops were grown the previous year. Skip two years if possible.

Treatment

There are a few methods for killing off soil-borne pathogens, or at least reducing levels enough to help keep

your vegetables healthy. Their main downside is that these methods are labor-intensive, and success is not guaranteed. The prevention strategies discussed above are more likely to keep wilts and root rots at bay. Nevertheless, here are a couple of techniques to consider in combination with preventative measures:

- Solarization involves laying out a clear (usually) plastic sheet for several weeks. This traps solar radiation and heats the soil enough to kill microbes – as well as insects and weed seeds. One obvious downside is that the heat will also kill beneficial bacterial and fungi. (Earthworms are mobile enough to find cooler soil.) Proponents argue that since beneficial soil microbes are present at much higher levels than pathogens, they can re-establish their populations very quickly.
- Phosphorous acid fungicides are effective against oomycetes. Typically they're applied as soil drenches, and require multiple applications. These fungicides are a form of phosphorus – note the extra "o" in "phosphorous" – that has no fertilizer effect and doesn't cause algal blooms. Fruit trees and perennials like asparagus might benefit from fungicides because they don't lend themselves to the sanitation and rotation methods mentioned above. (Always use personal protective equipment when applying fungicides, and follow all directions on the product label.)

Closing thoughts

As if it isn't hard enough to keep your vegetables safe from soil-borne diseases, many landscape plants are also susceptible to wilts and root rots caused by the very same pathogens. Most notoriously, sudden oak death is caused by a type of *Phytophthora*. My rhododendrons are also struggling with *Phytophthora*, and they may or may not be responding to the phosphorous acid soil drenches I've been applying recently. Symptoms and prevention strategies are the same as for garden plants.

References and further reading

Featured image (cropped): Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org. CC BY-NC 3.0

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Growing VFN resistant tomatoes (PDF) UC Master Gardeners of Tulare and King Counties

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Verticillium wilt of vegetables University of Wisconsin

The Ornamental Garden in July

By Cathy Caldwell | July 2024-Vol.10,No.7

As any gardener knows from experience, July's heat and humidity can dampen our enthusiasm for working in the garden. However, a good strategy is to work in the cool hours of the morning or evening, and this is especially important if extreme heat continues. Just 10 or 15 minutes a day maintaining your garden can make a huge difference in how it looks and performs. Here are a few suggestions (for new gardeners) or reminders (for seasoned gardeners) for keeping your garden looking perky and well maintained despite the heat:

Deadheading and Dead-leafing: Devote a few minutes each day to snipping or pinching off spent blossoms and any dead leaves. Just choose one or two plants that need your attention and focus on those. The result will be a tidier looking garden with less stress and wear and tear on you. As a bonus, deadheading can trigger the production of more blossoms on many ornamental plant species.

Deadheading and "Deadleafing" a hardy geranium. Photo: Cathy Caldwell

Trim plants of old, tired, or tattered-looking foliage, flower stalks, or damage caused by pests or disease. Large-leaved plants, particularly hostas, look much more attractive if you trim off the leaves that have suffered heavy slug damage.

Selectively cut back or shear plants that have finished blooming to spur fresh new growth and perhaps some re-bloom as well. For general information on perennial plant care, see Care and Maintenance of Perennials/Penn State Ext and Growing Perennials/Clemson.edu. For the new gardener who would like more detailed information on perennial plant maintenance, Tracy DiSabato-Aust's book on *The Well-Tended Perennial Garden* is a useful, well-organized resource on the subject.

Stake or cage taller perennial species to keep them from flopping over or collapsing. Plants fall over for many reasons, including too much weight from flowers, too much moisture, too much shade, or overly rich soil. A number of plants may simply be cut back, pinched, or sheared to keep their height under control without loss of blooms. Goldenrod, asters, balloon flower, tall daisy species, catmint, and *Boltonia* fall into that category. Other plants should not be cut back but staked or caged instead to avoid damaging flower buds. Lilies, hollyhocks, foxgloves, and Crocosmias fall into this latter category.

Pinch back fall-blooming perennials, specifically chrysanthemums and asters, **before mid-July** to keep their overall dimensions under control and to prevent them from setting buds before fall. Do not pinch back these plants after mid-July because they won't have enough time to set new flower buds for the fall.

Neatly edge flower beds and replenish mulch as needed. This is one of the simplest and most effective ways to make your garden look fresh and inviting; plus, it moderates the heat and preserves moisture in the soil.

Monitor moisture levels. July is often the hottest month of the year and typically one of the driest. So, in the absence of adequate rainfall, provide supplemental water to plants as needed. Be water-wise and use drip irrigation or a hand-held hose or watering can to water slowly and deeply at the base of each plant. Infrequent deep watering is generally best for established plants. This encourages them to send their roots

deeper into the soil, which helps them become more drought tolerant. Plants that are becoming established in the landscape should receive about an inch of water per week. Newly-installed trees and shrubs may require more water, particularly during their first year or two in the ground.

Keep the garden from looking crowded and overgrown. Dividing some of those overgrown perennial clumps and thinning them out will improve the overall appearance of your garden. While fall is preferable for dividing most perennials, some, such as bearded Irises, may be safely divided in summer in the absence of a drought. Irises are extremely drought resistant and normally tolerate being divided in July or August with no problem. However, given a long stretch of hotter, drier than normal weather, such as we are experiencing this summer, it would be wise to postpone dividing them until conditions are more favorable. That might mean waiting until September, which is perfectly okay. The irises will still have plenty of time to settle in before winter. If you do attempt to divide your perennials in the summer, choose a cool, cloudy, or overcast day to do it. Water the plants deeply the day or evening before so that they are well hydrated. Dig them up, divide them, and plant the divisions right away so that the roots don't dry out. Cover the root zone with mulch to cool the soil and help retain moisture. Give the divisions some protection from the sun while they become established. Shade cloth or a row cover or even an old umbrella tilted at an angle can provide huge benefits as temporary protection from strong sunlight. Water early in the day for maximum benefit to the plants and continue to keep them well watered for the remainder of the summer. For detailed guidance on dividing perennials, see Guidelines for Dividing Perennials/The Garden Shed

Check containerized plantings daily for sufficient moisture levels. Potting soil dries out at the surface, but it may be wet deeper in the pot. Stick your finger into the soil about two inches. If the soil at the tip of your finger feels dry, then add water. Water the soil – not the leaves. Bear in mind that plants have different moisture needs. Succulents, for example, prefer to be kept on the drier side whereas many annuals prefer evenly moist soil. How often you need to water will depend on the planting medium used, the type of container, the amount of sunlight, and the plants themselves.

Weeding – This task never fails to be included on every "to do" gardening maintenance list during the growing season. It is one of those never-ending chores that most ornamental gardeners detest. But here's why it's important: Weeds compete with ornamental plants for moisture and nutrients, plus they have an amazing capacity for self-preservation. For example:

- **Oxalis (Yellow wood sorrel)** – This prolific annual weed is highly successful at reproducing itself. It looks innocent enough with its tiny yellow flowers and clover-leaf shaped foliage. But the flowers give way to seed capsules, which explode, throwing the seed several feet away.
    -

Horse Nettle – This perennial weed reproduces by seed as well as by an extensive root system. If you dig it out of your garden (rather than use an herbicide), remove the entire root. Any root fragments left in the soil can remain viable for years and will wait patiently to sprout until growing conditions are ideal.

Horsenettle (Solanum carolinense), Ohio State Weed Lab, Bugwood.org

- **Crabgrass** – A summer annual, this weed certainly qualifies as one of the top ten nuisances in both the lawn and the ornamental garden. It germinates from mid-spring to mid-summer and reproduces by setting seeds and by rooting at the lower joints. To control it, dig it out by the roots and make sure you get every bit of the plant.

Tackle these and other weeds when they are small, easy to pull, and less likely to require an herbicide to control them.

ORNAMENTAL PLANT DISEASES

Powdery mildew – This easily recognized fungus appears as white or grayish talcum powder-like spots or splotches, usually on the upper sides of leaves. Powdery mildew affects a wide range of plants including crape myrtles, lilacs, garden phlox, sunflowers, zinnias, and dahlias, just to name a few. To avoid the problem in the first place, buy healthy plants. Select mildew-resistant varieties if possible. Space new plantings far enough apart to allow good air circulation. Provide adequate moisture and nutrients to keep them healthy. Remove any diseased plant material to help minimize the spread of fungal disease. If only a few leaves are affected, little, if any, action may be required. But if the problem is severe and a fungicide is called for, follow the manufacturer's directions carefully before applying the product to the affected plant.

Aster Yellows – This highly contagious viral-like plant disease is caused by a phytoplasma, a tiny organism that is spread from plant to plant by sucking insects such as leaf hoppers. This disease affects more than 300 ornamentals, vegetables, and weeds. It is characterized by chlorosis (yellowing of the leaves while the veins remain green), extreme leafy growth, and deformed flowers that often remain green or sometimes exhibit tufts of green foliage within a blossom or in place of a blossom. Some annuals and perennials affected by aster yellows include aster, coneflower, coreopsis, cosmos, chrysanthemum, petunia, snapdragon, marigold, and zinnia. Other than selecting plants that are immune to the disease, there is no effective cure for it. Remove the entire plant to prevent this disease from infecting other plants in your garden. The aster yellows phytoplasma organism will not survive once the

The purple coneflower in the front is afflicted with aster yellows. Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

plant dies. Learn more at Aster Yellows: What is it and what do I do about it?/The Garden Shed

ORNAMENTAL PLANT INSECT PESTS AND PREDATORS

It's a bug-eat-bug world out there and keeping insect populations under control is one of the gardener's biggest challenges in summer.

Red spider mites are a type of arachnid and not true insects. They may be tiny, but they can do a lot of damage. Pale, green coloration on foliage may be an indication of spider mite damage. Roses, evergreen species, and marigolds are examples of plants prone to their damage. To test for spider mites, hold a white sheet of paper underneath a leaf. Briskly tap the leaf to dislodge any suspected tiny, crawling red mites. If they are present on the leaf, they will drop onto the paper. A minor infestation can be remedied with a forceful, direct spray of water from a hose. Severely infested annual plants should be removed and destroyed.

Aphids are a common pest of many ornamental plants as well as houseplants, vegetables, fruit trees and field crops. These soft-bodied insects prefer succulent new shoots or young leaves. These pests have sucking mouth parts that allow them to suck juices from plant tissues. While a mild Aphid infestation is not particularly harmful to a plant, a heavy infestation can stunt the growth of a shoot, cause slightly curled leaves, and delay the production of flowers and fruits. In addition, Aphids secrete a substance called honeydew, which encourages the growth of an unsightly sooty mold on foliage and interferes with photosynthesis. Fortunately, aphids have natural predators, such as lady beetles, parasitic wasps, lacewings, and damsel bugs, which help mitigate damage to plants. Also, a sharp spray of water is usually sufficient to dislodge them from plants. *Asclepias tuberosa* (milkweed), hibiscus, and Garden phlox are several plants that are often subject to aphid damage. A fascinating fact about aphids is that they are capable of reproducing parthenogenetically – that is, without mating. For more information on how that is possible and to learn about the relationship between aphids and ants, see Virginia Cooperative Extension publication ENTO-350NP on Aphids.

Not all bugs are pests. **Ground Beetles,** for example, are the unsung heroes in the battle against garden insect pests. Of this huge family of insects, approximately 2,500 species may be found throughout the United States. Most ground beetles have shiny, sometimes iridescent, black, blue-black, brown, or green hard shells on flattened bodies with narrow heads. They are equipped with large mandibles that they use to capture their prey. These nocturnal creatures feed at night and hide during the day under mulch, leaves, rocks, boards, or logs. They have wings but seldom fly, opting instead to scamper quickly away when disturbed. Both the adult and larval forms of ground beetles have voracious appetites and prey on a variety of soil dwelling pests as well as plant and tree pests.

Earwigs are considered to be either beneficial insects or pests or both, depending on your point of view. Anatomically, they are one of the stranger-looking insects in the garden. Large pinchers emerge from the tips of their abdomens giving them a ferocious look. Mostly nocturnal creatures, they feed on plants at night and hide during the day in moist, dark places, such as mulch, soil, plant debris and under rocks and boards. They are regarded as a nuisance because they feed on the flowers and foliage of a wide range of plants, leaving irregular holes or ragged edges. Despite their destructive eating habits, earwigs do have some useful qualities. They are omnivorous and help break down organic matter in compost piles. They are natural predators of aphids, mites, nematodes, insect larvae, slugs, snails, and other slow-moving insects. For more information, see VCE publication 3101-1527, Earwigs in Virginia.

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INVASIVE ALERT: Japanese Honeysuckle (*Lonicera japonica*) is an aggressive, fast-growing vine that is invasive throughout the entire eastern United states. It forms large tangles that smother and kill other vegetation. Often found at the edge of a disturbance, such as a path or along the edge of woods, it prefers full sun but is highly adaptable and can thrive in shaded environments as well. It drops its leaves in colder climates but can be semi-evergreen to evergreen in warmer climates. It reproduces by seed or from runners. For advice on when and how to control this invasive species, see the Invasive Plant Control Calendar, which was published in the May 2022 issue of *The Garden Shed*. Also see the Blue Ridge Partnership for Regional Invasive Species Management (PRISM) fact sheet for information on Japanese Honeysuckle.

If you have a stiltgrass problem, now is the time to start keeping an eye on it, so you can treat it BEFORE it sets seed. Learn more at Weed Alert/Blue Ridge Prism/Act Now on Japanese Stiltgrass.

Japanese honeysuckle — close-up of a seedling. Note the two different types of leaves. Photo: Cathy Caldwell

Japanese stiltgrass. Photo: Susan Martin

Featured Photo: Cathy Caldwell

SOURCES:

Monthly Gardening Tips/July/Piedmont Master Gardeners

The Well-Tended Perennial Garden (Tracy DiSabato-Aust, 2006)

Invasives Watch for July

By Cathy Caldwell | July 2024-Vol.10,No.7

Japanese Stiltgrass and Japanese Honeysuckle

Learn more about these invasives and how to treat them in this month's **Ornamental Tasks & Tips** article, *The Ornamental Garden in July*. Don't miss this new **video** about Japanese stiltgrass, which is very helpful on identification and mechanical pulling.

For excellent guidance on controlling invasives in our area, check out the Blue Ridge PRISM (Partnership for Regional Invasive Species Management).

Invasive Japanese Honeysuckle
(*Lonicera japonica*)
Photo: Missouri Botanical Garden
Plant Finder

Invasive Japanese Stiltgrass (*Microstegium viminium*)
Photo: University of Maryland Extension
Japanese Stiltgrass in Home Landscapes

Upcoming Events

By Cathy Caldwell | July 2024-Vol.10,No.7

Garden Basics: Making Hypertufa Containers–CLASS IS FULL

Thursday, July 20 @ 2:00–4:00 pm, Trinity Episcopal Church
1118 Preston Avenue, Charlottesville

Hypertufa containers last for years and are ideal for displaying flowers, bulbs, succulents, and other plants—indoors or out. You will learn: what hypertufa is, how to make a hypertufa container safely, and plants that do well in a hypertufa container.

Free

Find out more

"Butterflies of the Night: Moths and their Host Plants" at the Quarry Gardens, Schuyler, Virginia

July 20 @ 7:30 pm – 9:30 pm
$5.00 – $10.00

Deborah Davis, painter, herbalist, and gardener will introduce moths and their plant hosts on the first day of National Moth Week. In the same order as butterflies—lepidoptera—are some 160,000 species of moths. We may think of them as pests, and some are, but they play an essential role as nocturnal pollinators for a wide array of plants that are not visited by bees or butterflies.

The program will start before dark with a presentation in the Visitor Center classroom and end with lighting a sheet outside to attract and identify moth visitors.

Find out more⇒

Blue Ridge PRISM Summer Quarterly Meeting

Monday, July 24
11:30 am – 1:00 pm

Free Webinar featuring guest speaker Heather Holm

Register for webinar⇒HERE

* This webinar will not be recorded. Please join online on July 24.

Entries Due July 31 for the Albemarle County Fair

July 31 @ 12:00 pm – 8:00 pm, James Monroe's Highland 2050 James Monroe Parkway, Charlottesville, VA

The Piedmont Master Gardeners, in partnership with Albemarle/Charlottesville 4-H Youth Development, invite home gardeners, brewers, bakers, beekeepers, viticulturalists, artists and crafters to submit entries for the 2024 Albemarle County Fair.

Intense Heat and Drought

By Cathy Caldwell | July 2024-Vol.10,No.7

You probably didn't need a drought monitor or an announcement from the water authority to tell you that we're in the midst of a drought. And simply walking out the door tells you all you need to know about the extreme heat we're experiencing. But perhaps a few tips on helping your yard and garden survive would come in handy. After reviewing a number of articles from the nation's extension services, we pulled together the following:

Watering

You may be aware of this basic watering advice from Virginia Tech, but it bears repeating:

> *"Watering **deeply** can help stave off the effects of temperature and drought.*
>
> *"If gardeners can irrigate or water their gardens, they need to be mindful of a few things," Byington said. "It is better to water **a lot at one time, rather than to just give small amounts of water more often.** Watering thoroughly allows plants to develop the deep roots they need to obtain moisture and nutrients from deeper in the soil."*
>
> *Gardeners should also be mindful to **water in the morning or the evening,** but not during the hottest parts of the day, Byington added.*
>
> *"Water early in the morning to allow plants to get moisture before dealing with the hot day or water late in the evening to allow plants to replenish after the day," she said. "Watering when temperatures are cool, allowing for less evaporation, works as well."*
>
> *— Devon Johnson, Va. Tech News, Heat and dry weather pose problems for landscape plants*

When the Arizona Extension speaks about heat and drought, we sit up and pay attention:

> *A **critical element** of proper irrigation during our hot summers is **timing**. It is advisable to water early in the morning, **pre-dawn** even. . . . **It is important to apply the water to the soil before the heat of the day, when rapidly warming soil surfaces can begin to dry and wick moisture out of the root zone. Watering early ensures that the water moves deeper into the root zone, where it can be retained and is accessible by plant roots for longer.** For established trees and shrubs you might begin irrigating anytime after midnight and may need to apply water at a slow and steady rate for multiple hours to ensure water infiltrates to the roots at a depth of 2-3 feet.*
>
> — *Arizona Cooperative Extension/Maintaining Landscapes During Heat and Drought*

Some experts recommend watering between **3 am and 6 am**. LSU Ag. Center/Dos and don'ts in the garden during droughts.

The Arizona Extension Service recommends prioritizing trees and shrubs when intense heat and drought continue for long periods. We hope that won't be necessary, but our investment in trees and shrubs and their shade-making contributions would seem to mandate this approach if these conditions continue. Arizona Cooperative Extension/Maintaining Landscapes During Heat and Drought

— "Apply water efficiently. High temperatures mean a high potential for water to evaporate before it ever reaches the roots. Avoid sprinklers and instead use spot watering at the base of the plant, soaker hoses, or drip irrigation systems to provide water efficiently." Iowa State Ext/Managing the Garden in Extreme Heat.

— "Dealing with dry conditions can be especially hard for vegetable gardeners as many plants need consistent water to continue to produce and some need rain at critical times, such as corn during silking," Va. Tech News/Heat and dry weather pose problems for landscape plants.

What else?

— "Mulch, mulch, mulch. A 3- to 4-inch layer of mulch can reduce watering needs by as much as 50 percent." University of California Division of Agriculture and Natural Resources/10 Tips for Vegetable Gardening During a Drought. "But in a severe drought, organic mulches such as woodchips or bark can dry out and take up all the water that is being applied, before the water reaches the soil. The solution is to poke the hose end under the mulch and let the water run gently for a while." Cornell Coop.Ext/Tomkins County/Watering Guidelines Q & A.

— "Don't Fertilize. In extreme heat, plant processes slow down. Adding fertilizer promotes growth that the plant cannot support, leading to additional stress." Iowa State Ext/Managing the Garden in Extreme Heat.

— Do not cause any additional stress to plants. Heavy pruning is not suggested during this time." LSU Ag. Center/Dos and don'ts in the garden during droughts.

— "Don't worry if your lawn begins to go summer dormant in the excessive heat. Most lawns can survive 2 to 3 weeks of dormancy, and will green up again as temperatures cool." Nevada Ext/Tips for Keeping Your Landscape Plants Alive During a Drought.

— "Blossom and fruit drop are common in peppers, squash and cucumbers when high temperatures persist. Most plants will return to typical productions after a heat wave is over." Oregon State Ext/Heat wave in the

garden: How to identify and prevent heat stress in plants.

— "If you cannot take the plant to the shade, then bring the shade to the plant. Utilize shade cloth, screening, or even white sheets to reduce the amount of light hitting the plants and the surrounding soil. Putting up some type of shade cover helps the soil and plants stay a few degrees cooler while reducing the amount of moisture lost." Iowa State Ext/Managing the Garden in Extreme Heat

Horticultural shade cloth *at work. Photo courtesy of Arizona Coop. Extension*

— "If using a shade device not typically used for gardening, like a **beach or picnic umbrella**, consider adding it in the **late morning and removing it toward the end of the day** so plants get some direct sunlight. Be prepared for plants that are heavily shaded for long periods to "stretch" toward more light." Oregon State Ext/Heat wave in the garden: How to identify and prevent heat stress in plants.

This gardener fashioned a ***DIY sun shelter*** *with bed sheets. Photo courtesy of L.R. Harris.*

— “Numerous ornamentals abort or drop buds and flowers after prolonged exposure to high temperatures. This allows the plant to conserve resources for parts of the plant necessary for survival.” Oregon State Ext/Heat wave in the garden: How to identify and prevent heat stress in plants.

We recommend reading all of the articles cited above, especially if you seek a fuller understanding of how drought and excessive heat affect plants. And if, like us, you’re wondering what to expect next, you’ll find longterm outlooks for heat, drought, and precipitation at the National Weather Service’s Climate Prediction Center.

Featured image: “Tired tomatoes“, by risingthermals (cropped, rotated, and colors modified). CC BY-NC 2.0