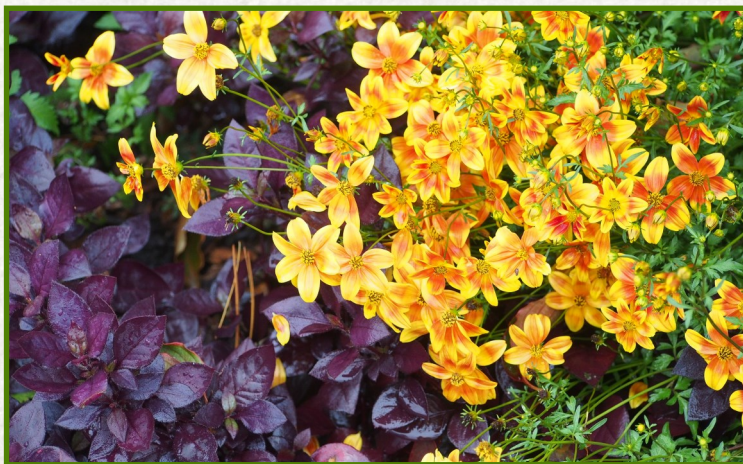


# Gardening Matters

Yates County Master Gardener Newsletter

Summer 2023, Issue 2



## Inside this Issue

- \* What to Do in the Summer
- \* Favorite Summer Herbs
- \* Yates County Master Gardener's Corner
- \* Garden Myths
- \* Controlling Invasive Pests
- \* Late-flowering Perennials
- \* Growing Carnivorous Plants
- \* Intro to Food Preservation
- \* Shrubs & Switches

# Educator's Note...

***As overwhelming as your garden might seem, it boils down to three questions: What do you have to work with, what are you hoping to accomplish, and how do you make it happen?"***

- Billy Goodnick

In July, all of us who love gardens ride the wave of joy and frustration that makes gardening so addictive. All the planning done in winter and the planting done in spring is beginning to come to fruition now in the vegetable garden. Our anticipation grows as we watch our tomatoes expand, our bean plants stretch up their trellis, and the air fills with the scent of herbs in the summer heat.

As valuable as my vegetable garden is to me, my ornamental garden holds my heart. Seeing my favorite perennials again after a long absence brings as much joy as greeting old, dear friends. Luckily, my oldest and dearest friends are also gardeners, so that they won't take that statement in any other way than as a compliment. I hope your gardening season has been full of these moments of joy, outweighing the frustrations we've faced this year, including a late freeze and dry conditions through May and the first half of June.

Although this part of the season tends to fly by in a blur, it's worth having deliberate moments of reflection in your garden. Where are you most happy? What plant combinations work and can be duplicated? What plants should move when the weather cools later in the season? Where do you have room to expand? When is the work not a pleasure anymore, and could be simplified or allowed to relax back into a wilder state?

On another note, our Executive Director, Arlene Wilson, has left CCE-Yates County. We will miss her enthusiasm for gardening and her dedication to garden-based education. Changes are never easy, but the association's commitment to gardening and gardeners remains strong. We wish Arlene the best for moving forward and are grateful for the time we had with her.

***Caroline Boutard-Hunt***  
***Agricultural/Horticultural Educator***  
***Master Gardener Volunteer***



*Photo Credit: Maggie Mahr*

---

## About Cornell Cooperative Extension

CCE connects communities with Cornell research and expertise to enrich and empower New York State neighbors, local businesses, towns, and cities.

In neighborhoods, homes, workplaces, and schools, CCE educators work to empower individuals and families by raising children, saving energy and money, growing, and preparing food, starting, sustaining businesses, and protecting the environment.

Each CCE office relies on county, state, and federal funds to solve local problems and strengthen communities.

For more information, please contact the CCE-Yates County Association at 315-536-5123 or visit us online at <https://yates.cce.cornell.edu/>.



# Garden Chat:

## Catching up w/ the Yates County Master Gardeners!



**What herbs do you most appreciate having in your garden during the summer?**

Although I have a variety of herbs that I love in the garden (mainly for culinary purposes), the one I appreciate most is lavender. I love it for its refreshing scent and long-lasting flowers that attract pollinators. Lavender is a charmer that appeals to almost every sense and brings me joy.



**Jan**

**Christine**



Rosemary. I use it with anything chicken or lamb mostly. I used to crush it between my fingers to smell it.

For me it is basil. It's such a summer herb and I use it frequently, especially when making marinara sauce from my tomatoes.



**Beverly**

**Caroline**



I can't decide on just one but I'll narrow it down to French tarragon and parsley. Tarragon is delicious with chicken or fish but I mostly use it as the base to my favorite summer salad dressing, a riff on the classic Green Goddess dressing. I also use parsley more like a vegetable in the summer than an herb, blended into sauces or chopped coarsely and mixed with chopped tomatoes and cucumber. Nothing says summer to me quite so much as fresh herbs from the garden!

So many delicious herbs to enjoy during the summer growing season. Dill might be my favorite for lots of reasons. It's yummy with grilled salmon, brightens picnic salads and what are dill pickles without dill heads! It's also a breeze to grow. It naturally self-seeds its way throughout the garden - sometimes too much! In the fall, shake out the seeds from a couple of heads and gently work it into soil. Voila! Next spring, you'll have more fresh dill. Enjoy!



**Marion**

# Garden Chat:

## Catching up w/ the Yates County Master Gardeners!

### Celeste



**Basil would be my favorite as well!!! Fresh tomato & cucumber salad with fresh basil!! Yum! Other salads, stir fry & don't forget pesto!!**

### Dixon



**For me it's Rosemary. My husband does the cooking, and rosemary is the fresh herb he uses the most often. And it smells divine.**

### Karen



**Basil- I just love fresh basil in my summer salads**

## Master Gardener Volunteer Training 2023

Interested in being a Master Gardener Volunteer in Yates County? You're in luck! The Master Gardener Regional Training starts on **September 26th** (from **9:00 am-2:00 pm**), and is scheduled to run through November 22nd of this year (subject to change). This 10-week course is **\$140** per person, and will take place at Cornell AgriTech (New York State Agricultural Experiment Station), located in Geneva, NY

**The Yates County Master Gardeners support other community members in many ways. Here are some of them:**

- \* Answer gardening, lawn, shrub, and tree questions phoned into the Cornell Cooperative Extension.
- \* Identify disease and causes of damage to plants, and provide suggestions for control.
- \* Test for soil pH on samples brought into the Cornell Cooperative Extension office.
- \* Participate in the plant sale
- \* Sponsor the annual event Gardening Matters Day.
- \* Support the Penn Yan Community Garden.

- \* Work with youth to build an understanding of gardening, wildlife, and the environment.
- \* Provide advice and guidance for development and maintenance of public and community gardens.
- \* Write/edit articles for the "Gardening Matters" quarterly newsletter.

Anyone who enjoys gardening, has a desire to share knowledge and skills, and who is willing to provide volunteer community service is encouraged to apply. For more information, contact the CCE-Yates County office at 315-536-5123 or email Cheryl Flynn at [cj348@cornell.edu](mailto:cj348@cornell.edu).





# What to do in...

## July

- \* Those containers and hanging baskets that looked so beautiful in June may be starting to look a little worn. To keep them looking their best, make sure you are deadheading, watering regularly, and, if growth slows, provide them with a light dose of water soluble fertilizer every couple of weeks.
- \* Clean out your freezer to make room for this summer's bounty. This is a chore I hate but never regret doing, especially when I get a sudden windfall of blueberries or green beans that I want to preserve for the winter months.
- \* Weed, weed and weed some more! Just 10 minutes a day spent going through your garden quickly to get rid of small weeds will save you hours of work pulling out the big ones.



## August

- \* Start looking for shrubs and perennials again at your local nurseries for fall planting. Note where you have had bare spots through the season and try to find plants to fit those areas. I focus less on specific plants and more on what attributes I need for maximum flexibility.
- \* Time to start planting fall vegetables! When we farmed, we used to refer to August as "second spring" as so many delicious vegetables are planted in the beginning of August for harvests all the way up through December and beyond. Carrots, peas and broccoli grow beautifully in our fall weather. Winter radishes such as Watermelon, Amethyst and Black Spanish will add a thrilling crunch to meals through early winter. Kale, spinach and chard will become sweet and mild once we hit the first frosts of the season.



## September

- \* September is the start of bulb planting season! Look back at your spring photos to see where you have gaps to be filled with spring-blooming cheer.
- \* This is a great month to divide your perennials, particularly, hostas, daylilies and peonies.
- \* Have any of your houseplants outgrown their pots over the summer? Repot them now to have them looking their best when you move them inside for the winter. Also, check them over for pest issues such as scale or aphids and treat while they're still outside.



### Want to be featured in *Gardening Matters*?

If you have any seasonal tips or photos you would like to share, please submit them to:

Master Gardeners/CCE Yates County  
417 Liberty Street, Suite 1024  
Penn Yan NY 14527



# Yates County Master Gardener's Corner

## Cheryl Flynn (Master Gardener Volunteer Coordinator)

We have had a very busy Spring! This season, we had our Gardening Matters Day on April 15th, which was a great success and well-attended. Our speakers and topics were:

- \* **Lexie Davis (Natural Resources Educator, CCE-Yates County) – Tree pruning and tree disease for the home gardener.**
- \* **Brian Eshenaur (Senior Extension Associate, NYS Integrated Pest Management) – Native Plants and Invasive Species.**
- \* **Caroline Boutard-Hunt (Agricultural and Horticultural Educator, CCE-Yates County)- Gardening for Birds**

If you could not attend, the presentations were recorded and are available to view on our YouTube channel (visit <https://www.youtube.com/@CCEYates> to subscribe).

In May, our annual Native Plants Sale was held at the gazebo by the Penn Yan Library, and also was successful. We have seven different varieties of native plants that Caroline Boutard-Hunt started from seed and potted. Thank you, Caroline, for all the hard work!

In June, the Master Gardener Volunteers were able to landscape the Habitat for Humanity house, and enjoyed a lovely field trip to Sonnenberg Garden.

It was a beautiful day, and they had a surprise tenth-anniversary party for me. I was totally shocked!

**Penn Yan Community Garden Update:** the Penn Yan Town Board put up the signage of the Penn Yan Community Garden on the corners of South and Pleasant Streets and Main and South Streets. Thank you Karen Welch (Master Gardener Volunteer), for taking on this project. Feedback has been positive, as now everyone can find the garden.

The garden officially re-opened in June, with beds reserved for the vegetable variety trials, the Hope Center Food Keuka Food Pantry, and Milly's Pantry. Beds at the Community Garden are officially sold out for the year, with many new members to add to our garden family: Living Well, Pro Action, VETS, Keuka Housing, Black Cat, and the Girls Scouts.

Master Gardener, Bev Barnwell, worked with the Girls Scouts so that they could achieve their gardening badges. They planted flowers at the Homestead and have a garden plot at the Penn Yan Community Garden. They also cleaned two garden plots for the Living Well.

Finally, a special thank you goes out to James Burdette from Amazon, who donated a roto-tiller, gas can, garden straw, tomato cages, children's garden tools, garden fabric, and a wheelbarrow to the Penn Yan Community Garden.



*Pictured (Top to Bottom): Native Plant Sale at the Penn Yan Library, Master Gardener Visit to Sonnenberg Gardens (Canandaigua, NY) and PY Community Garden Signage*

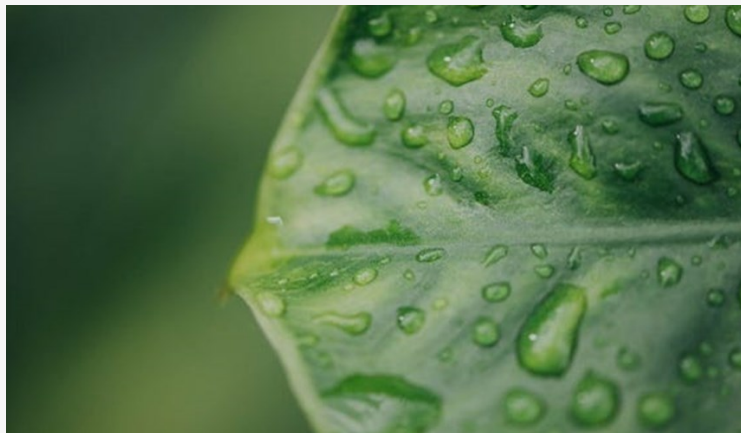
*Photo Credit: Cheryl Flynn*



# Garden Myths

## Glenn Bupp (PSU Extension Educator, Horticulture)

**Should you mist your houseplants? Is it a good idea to spray dish soap on outdoor pests? Can a copper penny prevent disease in a tomato plant? Find the real answers to common garden misconceptions.**



*Photo Credit: Chuttersnap on Unsplash*

New and experienced gardeners alike may be tempted to experiment with novel or creative plant care techniques touted online as effective home remedies for a wide range of plant problems. Unfortunately, many of these remedies do not work and even have the potential to do more harm than good. This article addresses some misconceptions commonly encountered when searching for plant remedies online.

### **Misting houseplants increases relative humidity.**

Many common houseplant species come from tropical regions of the earth with high temperatures and humidity. Generally, the temperatures inside our homes are suitable for these plants but relative humidity levels are much lower. This makes for an environment where leaves transpire rapidly and can desiccate quickly because warm, dry air has a high potential for stealing moisture and holding on to it. The simple solution would seem to be to raise the relative humidity of your home for the plant.

Relative humidity commonly found in the home environment is 10-20%. Compare this to a greenhouse which has relative humidity levels above 50%, usually much higher. You would not want these humidity levels in your home as it would encourage mold and algal growth. So, why not apply water directly to plant leaves from a mister to replicate these conditions on a small scale?

Because warm, dry air readily collects moisture and moves around the house, any relative humidity

gained in a small area is lost quickly to the surrounding air. Think about a hot shower in a small bathroom and how the steam quickly leaves once the door opens. Soon, temperature and humidity levels return to those of the rest of the house. You would need to apply a constant mist, in a compact, closed area to achieve high relative humidity for house plants. Even plants in the bathroom, from the scenario above, would lose the gained humidity a few minutes after the shower has ended. The temporary fluctuations in humidity from misting do little for the health of the plant long-term.

Misting may even cause some problems for plants. Large water droplets that collect and sit on leaves for long periods of time can cause problems with rot and mold. Remember, liquid water is not the same as water vapor. However, orchids and air plants (Tillandsia) do benefit from misting. Orchids have fleshy roots with a special adaptation called velum which can gain moisture for the plant from misting. Similarly, Tillandsia have trichomes that are adapted to gather moisture from the air. Misting these plants is one way to 'water' them but it is different than raising relative humidity needed by other tropical plants.

### **Dish soap is a cheap, safe pesticide.**

There is no denying that dish soap can kill pests but it will also kill beneficial insects and quite possibly the plant itself. If a product is not labeled for garden use, it may not be used as a pesticide under law. There are insecticidal soaps with different chemistries labeled for use on garden pests and, when applied to label recommendations, are very safe. Even though insecticidal soaps are cheap, the rationale of using a soap you already have under sink is certainly tempting. But, would you use insecticidal soap on your pots and pans if you were out of dish soap?

Dish soap, bath soap, and insecticidal soap all have different chemistries intended for different uses. Dish soap is actually a strong surfactant, designed to remove tough fats and oils from cookware. Plants have delicate oils and waxy cuticles that are easily stripped by dish soap leaving the plant vulnerable to drying out and sunburn. Dish soaps can also have antimicrobial properties that can interrupt symbiotic relationships that plants may be forming with beneficial microbes.

*Continued on Page 7*

# Garden Myths Continued:

Many modern bath soaps are saponified using sodium hydroxide, while insecticidal soaps use potassium hydroxide. Both are effective against scale insects but residual sodium ions from the use of bath soaps can harm plants. Insecticidal soaps can be found at your local garden center. They are an inexpensive, safe, and effective means to control insects and mites on plants.

## Copper pennies can control tomato blight.

Blight may refer to two different diseases in tomato, the fungus early blight (*Alternaria tomatophila* and *A. solani*) or late blight caused by the fungus-like oomycete *Phytophthora infestans*. Both diseases can be found in Pennsylvania. There are copper-based fungicides registered for use in managing early and late blight. So, the rationale of inserting a copper penny into a cut on the stem of a tomato plant to prevent blight has at least some basis. However, copper fungicide sprays are topical treatments used to prevent blights from establishing on plants. Sprays lose residual effect and must be reapplied to stay effective. Copper is not a systemic fungicide and will not translocate throughout the plant. Copper from pennies will also not translocate throughout the plant. What's more, copper sprays are formulated as copper hydroxide or copper oxychloride to make them more effective when applied. Placing a chunk of copper in the plant or copper mesh around the plant is not an effective application. Additionally, making unnecessary wounds to your plants can create entrance ways for other diseases or pests.

If early or late blight is a problem in your garden, practice crop rotation, proper culture, and blight resistant tomato varieties. Early blight is easily contracted when plant leaves are in contact with the ground. Keep plants staked and lower leaves trimmed as needed. Keep foliage dry when watering. Late blight overwinters easily in infected potato tubers. Under the right conditions late blight can take over a plant quickly and you may need to destroy infected plants. Do not grow solanaceous vegetables such as tomatoes, potatoes, peppers, and eggplant in the same patch of garden within 2 years of the last solanaceous crop. Finally, consider planting blight-resistant tomato varieties to curb the spread of the disease in your garden.

**From Penn State University:** <https://extension.psu.edu/garden-myths>

## Cornell Resources

Cornell's home-gardening website (also known as "Cornell Garden-Based Learning") has links to excellent resources, including Vegetable Varieties for Gardeners, Vegetable MD Online, Vegetable Disease Factsheets, and growing guides for more than **50** different vegetables.

**Visit:** <http://www.gardening.cornell.edu/homegardening>

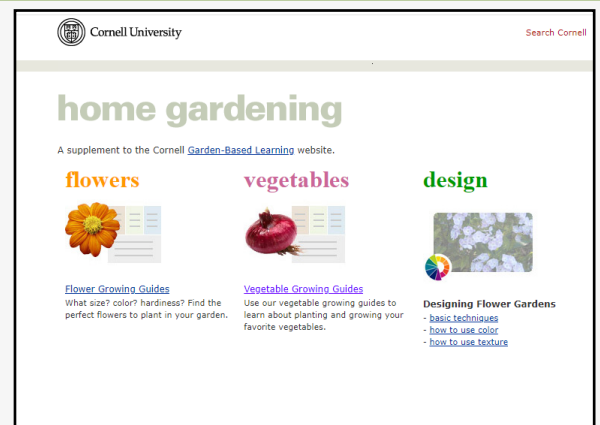
Garden-based Learning is in the Horticulture Section of the College of Agriculture and Life Sciences (CALS) School of Integrative Plant Science (SIPS)



Photo Credit: Matthew Borden, UF/IFAS



Photo Credit: waldeneffect.org





# How to Control Invasive Pests While Protecting Pollinators and Other Beneficial Insects

**David Smitley (MSU Entomology); Diane Brown, Rebecca Finneran and Erwin Elsner (MSU Extension) Joy Landis (MSU IPM); Paula Shrewsbury (Univ. of MD Entomology); Daniel Herms (The Davey Tree Expert Company, Kent, OH); and Cristi L. Palmer (IR-4 Project-Rutgers)**

---

## **Pesticides should never be applied unless they are necessary to maintain plant health.**

Pesticides should never be applied unless they are necessary to maintain plant health. Using preventive cover sprays, where pesticides are sprayed several times a year on a calendar basis, has been shown to create more pest problems than it solves. Not only do cover sprays create the potential for pesticide runoff and increased human and pet exposure, they actually create pest problems by suppressing predators, parasitoids and diseases that keep plant pests under control. It is common to see outbreaks of spider mites, aphids and scale insects where pesticides are used. Only spray one plant at a time, and only if it is necessary.

Some key points about pollinator biology are good to remember if you have to use a pesticide, even if you are only treating one or two trees, shrubs or perennials. First, most bees and other pollinators forage during the day, so if you can spray at night or in the early morning, you can reduce the risk of accidentally spraying them. Second, pollinators are attracted to flowers. Anything that has flowers or is about to flower is a higher risk than a plant that is past bloom. If you can remove the flowers by mowing or pruning from around the treated plant, and anywhere your application may drift, you can significantly reduce risk to bees and other pollinators.

## **Use low-impact pesticides**

Choose insecticides that are highly selective to a specific type of insect and so have low toxicity for others (signal word of Caution on the label or EPA Reduced Risk product). Other characteristics of low-impact pesticides are those that break down rapidly after application and therefore have minimal impact on pollinators and natural enemies. However, using these products requires some knowledge about their relative toxicity to beneficial insects and their potential to cause leaf or flower injury (phytotoxicity). The following types of products have a minimal impact on beneficial insects.

## **Insecticidal soaps**

Insecticidal soaps are applied as a foliar application (sprayed on plant leaves) and are effective on a wide range of plant pests when the soap spray comes into contact with the pest. Most commercially available insecticidal soaps are made of potassium salts of fatty acids and kill by disrupting the structure and permeability of insect cell membranes. Insecticidal soaps are most effective on soft-bodied insects such as aphids, adelgids, lace bugs, leafhoppers, mealybugs, thrips, sawfly larvae, spider mites and whiteflies. They are not effective on pests as a residue on the plant surface, and therefore are not toxic to pollinators after the spray dries. They can be safely used at any time to control pests on plants that are not attractive to pollinators. However, on pollinator-attractive plants, spray at dawn or dusk when pollinators are not present.

Generally, concentrations of insecticidal soaps exceeding 3% may cause some leaf or flower injury, and concentrations as low as 1.5% may injure sensitive plants. Read the product label for a list of sensitive plants and avoid spraying those. If uncertain of a plant's sensitivity, spray a few leaves or flowers first and wait at least three days to watch for symptoms of spray injury, which include yellow, black or brown spots, brown (necrotic) edges on leaf and petal tips, scorch or discoloration. Some landscape plants known to be sensitive to insecticidal soap are horse chestnut, mountain ash, Japanese maple, sweet gum, jade plant, lantana, gardenia, bleeding heart, sweetpeas, crown-of-thorns and some cultivars of azaleas, begonias, chrysanthemum, fuchsias and impatiens.

It is best to purchase a commercial product formulated for use on plants rather than prepare your own spray from dish-washing detergents or other household cleaners because homemade recipes may be more toxic to plants. Most such products are detergents rather than true soaps, which can damage your plants. Only use products that are specifically formulated and labeled for use as insecticide. Many insecticidal soap products are listed by the Organic Materials Review Institute (OMRI) at [www.omri.org](http://www.omri.org).

*Continued on Page 10*

# How to Control Invasive Pests While Protecting Pollinators and Other Beneficial Insects

## Horticultural oils

Horticultural oil is a term for the various oils used for pest control on plants. Most horticultural oils are lightweight and petroleum-based, but some are made from grains, vegetables or neem tree seeds. Like insecticidal soap, horticultural oils work best when the spray comes in contact with the pest. Once the oil spray dries, it does not have much effect and becomes safe for pollinators and other beneficial insects. Horticultural oil can be safely used at any time to control pests on plants that are not attractive to pollinators. However, on pollinator-attractive plants, spray at dawn or dusk when pollinators are not present.

Horticultural oils give excellent control of armored scales, such as *Euonymus* scale and oystershell scale, and can also be used for aphids, whiteflies, spider mites, true bugs, caterpillar and sawfly larvae and more. The recommended concentration of horticultural oils for pest control is usually 2%. However, even at 2%, some plants are sensitive to oils, including Japanese maple, red maple, hickory, black walnut, plume and smoketree (*Cotinus coggygria*). Plants reported as somewhat sensitive are Colorado blue spruce, redbud, juniper, cedar, cryptomeria and Douglas fir. Applying oils during high humidity or high temperatures may have a toxic effect on plant growth. Plant injury symptoms following an application of horticultural oil are discoloration, yellowing, leaf or flower browning (necrosis), black spots and terminal or branch dieback. It is best to spray a few plants first and observe them for three days for these phytotoxicity symptoms. Many horticultural oil products are listed by the OMRI.

## Microbial or biopesticides

Several pesticides sold are derived from naturally occurring pathogens such as bacteria or fungi. These microbial or bio-pesticides vary in their toxicity to bees, butterflies and other beneficial insects. Some bioinsecticides, such as those derived from the fungus *Beauveria bassiana*, are toxic to bees and should not be used where pollinators are present. Other bioinsecticides may have low impact on pollinators due to their low toxicity or short residual, which allows them to be applied in the evening or at dawn when bees are inactive.



*Pictured: Monarch caterpillar on a common milkweed. Milkweeds are its sole source for food.*

*Photo Credit: Steven Katovich, USDA Forest Service, Bugwood.org*

## Considerations for using certain biopesticides

The following active ingredients are found in products that have minimal impact on bees and other beneficial insects.

### ***Bacillus thuringiensis (B.t.)***

Products containing B.t. are made from a naturally-occurring soil bacterium. Many different B.t. products are available for landscape professionals and homeowners. Different strains of B.t. target specific pest groups, making them selective pesticides. For example, spores and crystals of *Bacillus thuringiensis* var. *kurstaki* (B.t.k.) are highly toxic when ingested by butterfly and moth larvae (caterpillars). The crystals containing the toxin dissolve only at an extremely high pH found in the caterpillar's gut. B.t.k. is not toxic to bees. However, avoid spraying or allowing spray to drift onto favored food plants of caterpillars such as milkweed, the sole food source for monarch butterfly caterpillars.

Another strain of B.t., *B.t. galleriae* (B.t.g.), targets several species of beetles in the adult and larval stages including scarab beetles (e.g., Japanese beetle), flat headed beetles (e.g., emerald ash borer), weevils and leaf beetles. B.t.g. is not toxic to bees or butterflies, but applications should be avoided where predatory beetles are active. B.t. *galleriae* is now available at garden centers and recent testing indicates that it will control Japanese beetle adults for two weeks after it is sprayed. It will not harm pollinators, but it is toxic to monarch caterpillars.

*Continued on Page 11*



# How to Control Invasive Pests While Protecting Pollinators and Other Beneficial Insects

While a B.t. strain works well for its target pest, it also breaks down quickly in sunlight, becoming ineffective after a few days. This makes B.t. very safe for pollinators, predatory insects and mammals. B.t. can be sprayed even when bees or butterflies are present. Many B.t. products are OMRI listed.

## ***Metarhizium***

The fungus *Metarhizium anisopliae* is found naturally in soils and infects and kills insects. Commercially available products of *M. anisopliae* (e.g., Met52) target thrips, weevils, whiteflies and mites on ornamentals, and ticks in turf. Once the product is sprayed on the foliage or drenched in the soil, the spores attach to the surface of the insect, germinate and penetrate the insect, multiply and kill it. *M. anisopliae* does not detrimentally impact honey bees and is being studied as a bio-insecticide of varroa mites, a pest of honey bees.

## ***Chromobacterium subtsugae***

This naturally occurring bacterium is used in a fermentation process that produces a product with insecticidal properties (e.g., Grandevo PTO). It is a broad spectrum bio-insecticide/miticide that controls or suppresses insect and mite pests on ornamentals and turf. It has multiple modes of action including oral toxicity (stomach poison), repellency and reduced reproduction. This product is applied as a foliar application and targets numerous caterpillar species in addition to aphids, whiteflies, thrips, psyllids, lace bugs, chinch bugs, mites and certain beetles. It suppresses a broad number of caterpillar species and should not be sprayed or allowed to drift in known habitats for threatened or endangered species of caterpillars and butterflies, such as fields with milkweed where monarch butterfly caterpillars feed. This product may repel bees for up to six days, so time applications to avoid disrupting pollination. Grandevo PTO (active ingredient *C. subtsugae*) is an OMRI-listed product.

## **Azadirachtin**

Azadirachtin is the active ingredient extracted from seeds of the tropical neem tree. Bio-insecticides with azadirachtin act as an insect growth regulator (IGR) in addition to being an anti-feedant and repellent to insects. It is effective at controlling insect immature stages and is broadly labeled for adelgids; aphids;

caterpillars such as budworms, tent caterpillars and webworms; beetles such as Japanese beetles, emerald ash borers, weevils and elm leaf beetles; leafhoppers; leafminers; mealybugs; psyllids; sawflies; scales; thrips; and whiteflies. Azadirachtin must be ingested to be toxic and, when applied as a foliar spray, has short residual activity, making it unlikely bees and other pollinators will be affected (no longer toxic after about two hours for bees). Direct contact has shown no effect on worker honey bees. Azadirachtin products can be safely used at any time to control pests on plants that are not attractive to pollinators. However, on pollinator-attractive plants, spray during late evening, night or early morning when pollinators are not present to minimize contact with adult bees that could potentially bring azadirachtin back to the nest where larvae are present. Many azadirachtin products are OMRI-listed.

## **Spinosad**

Spinosad is derived from a soil bacterium and affects the nervous system of insects and mites. It has contact activity, but is even more active when ingested. Several products containing spinosad are labeled for ornamental (e.g., Conserve) and agricultural uses to control a broad spectrum of pests including caterpillars, sawfly larvae, leaf beetle adults and larvae, thrips, leafminer and gall-making flies and emerald ash borer beetles. Spinosad is highly toxic to bees. However, toxicity is greatly reduced once the product has dried on the foliage, within three hours to one day depending on the product. Therefore, avoid use if bees are active, and if applications are needed, apply in the evening when bees are not active and product has time to dry. This product suppresses a broad number of caterpillar species and should not be sprayed or allowed to drift in known habitats for threatened or endangered species of caterpillars and butterflies. Some spinosad products are OMRI-listed and on the EPA Reduced Risk list.

**Note: For the complete publication, visit <https://www.canr.msu.edu/news/how-to-control-invasive-pests-while-protecting-pollinators-and-other-beneficial-insects>**

# Late-flowering Perennials

I have some gardening friends who think summer starts to slide the minute the Fourth of July parade ends. By the time the August calendar flips over, they don't care a whit anymore about their gardens. There are 2½ months left to enjoy our gardens — and a few of these tempting late bloomers are guaranteed to rekindle your passion for perennials.

1. **Aconitum carmichaelii** (monkshood) is a purple-blue-flowering, 5-foot, statuesque plant that will bring drama and color to the late-autumn garden. Bright green divided foliage is another attraction of this stately perennial.
2. **Agastache barberi** (anise hyssop) is a very fragrant, 1½- to 2-foot bushy plant with feathery blue-green foliage and tiny tubular flowers that attract bees and hummingbirds. Flower color can be red or coral-purple. The leaves emit a wonderful minty anise scent when touched.
3. **Artemisia lactiflora 'Guizo'** (white mugwort) will make you rethink your idea of artemisias as being all silver-foliaged with inconspicuous flowers. This variety is 4 feet tall, with bright green foliage and white attractive flowers — perfect for the back of a sunny border.
4. **Aster divaricatus** (white wood aster) is a good choice for gardeners who have had bad luck with asters. This 1- to 2-footer is covered with small daisylike flowers for months in the late season. Pinch growing tips during early months to promote a dense, floriferous habit.
5. **Aster lateriflorus 'Lady in Black'** (calico aster) satisfies the need for delicate burgundy foliage and masses of the palest pink flowers. Plants are multibranching 3-footers.
6. **Cimicifuga racemosa 'Hillside Black Beauty'** (snakeroot) continues to be the connoisseur shade gardener's choice with finely divided, dark purple foliage, sweetly fragrant, white, bottlebrush flowers, and a towering presence at 5 to 6 feet.
7. **Dendranthema 'Sheffield'** (chrysanthemum) adds a delicate new color to the fall palette. Flowers are small and single, tinged apricot-pink, and borne on 3-foot plants. Pinch chrysanthemums weekly early in the season to promote stocky growth. Mulch new plants over winter.
8. **Echinops sphaerocephalus 'Arctic Glow'** (thistle) is a departure from the classic blue ball thistle. These spiny flowers bloom white on 2½-foot stems. Texture and shape of flowers contrast with other plants.





# Late-flowering Perennials

1. **Helenium 'Copelia'** (sneezeweed) is a gorgeous autumn copper. Small, raylike flowers with darker centers bloom for weeks on sturdy 3-foot plants.
2. **Hylotelephium 'Bertram Anderson'** (stonecrop) combines dark burgundy fleshy leaves with late-blooming maroon flowers. This plant pairs beautifully with light green or blue-green sedums.
3. **Perovskia atriplicifolia 'Little Spire'** (Russian sage) is the right choice for gardeners who love the lacy, gray foliage and lavender spires of the tall Russian sage, but want a shorter plant. 'Little Spire' is only 2 feet but has all the attributes of the taller version.
4. **Salvia koyamae** (meadow sage) is a new twist on a perennial favorite. This species blooms late in the season with soft yellow, tubular flowers. Clumping foliage is heart-shaped and plant performs well in part shade.
5. **Tricyrtis hirta 'Miyazaki'** and **'Miyazaki Gold'** (toad lily) are two recommended cultivars of this shade- and moisture-loving plant. What a surprise to have delicate, pink-with-purple-spotted, orchidlike flowers in the fall! Attractive, arching green foliage has yellow margins in the Miyazaki gold plants.

There is still much to admire as the garden reveals its late-season secrets!



## Soil pH Testing Services

A pH test measures the acid/alkaline level of your soil. In the pH scale, 7.0 is considered neutral; lower numbers indicate acid soil, while higher numbers indicate that the soil is alkaline. Most plants prefer a pH of 6.8. pH levels influence nutrient availability, with most nutrients being available to plants when the pH is in this range (6.8-7.0). If a soil is too alkaline or too acid, certain nutrients may be limited.



To change soil pH to the desirable range, you will either add lime if the soil is too acid or sulfur if the soil is too alkaline. With your pH test result, the amount of lime or sulfur to add can be determined if any.

Are you starting a new bed or troubleshooting an older one? Now is a great time to do a soil test. CCE Yates offers free garden pH testing through the Master Gardener program.

Contact us at (315) 536-5123 for more information.



# Growing Carnivorous Plants

## Will Lenihan (Brooklyn Botanic Garden)

If you were asked to imagine a landscape inhabited by carnivorous plants, you might envision some primeval jungle of contorted vines and fearsome beasts. In reality, unless you live on a research station in Antarctica, chances are that some ferocious flora is growing very near you.

An expedition to see wild carnivorous plants in New York City, for example, could consist of a free ferry ride to Staten Island, where the spoonleaf sundew (*Drosera intermedia*), with its glistening “sticky-trap” leaves, can be seen at Clay Pit Ponds State Park Preserve. Several aquatic carnivores of the genus *Utricularia* also grow in the kettle ponds that dot the borough. Far from being delicate, tropical novelties, many carnivorous plants grow well in the New York City region, and they can be easily cultivated outdoors in most parts of the country in USDA Zones 5 through 10.

In the wild, most carnivorous plants grow in sunny, acidic, nutrient-poor wetlands called bogs. Home gardeners can replicate this environment in a mini-bog planter and grow a diverse array of species like sundews, pitcher plants, and butterworts. You can also include orchids and other non-carnivorous wetland plants to build a fascinating miniature habitat. There's no need to hand feed your carnivores—insects will readily come on their own. Expect to see houseflies and wasps fall prey to your flytraps and pitcher plants.

### Supplies

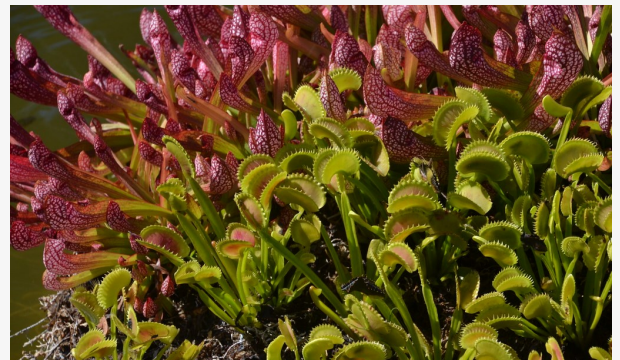
- **Carnivorous plants:** Select species that thrive in your climate and site conditions.
- **Rigid high-density polyethylene pond liner, with no drainage holes:** One choice is a MacCourt 9-gallon black liner, 26 inches wide and 7 inches tall, which can be purchased at Lowes or another home-improvement store.
- **Round plastic nursery plant pot (approximately 6 inches tall and 10 inches wide):** This pot must have drainage holes.
- **1.5-quart bag of horticultural lava rock**
- **1-cubic-foot bag of sphagnum peat moss:** The packaging must literally say “sphagnum” peat moss. Sedge peat and sweet peat are not acceptable. It should not have any added nutrients.
- **40- to 50-pound bag of horticultural sand or washed play sand:** Do not use paving sand or sand from a beach.
- **100-cubic-inch bag of fibered sphagnum:** This is simply dried sphagnum moss.
- **Optional top-dressing materials:** Try pine straw, pine bark, live sphagnum, and/or quartz gravel.



*Pictured: Pitcher plants growing in the wild in a natural bog in North Carolina.*



*Pictured: Carnivorous plants like pitcher plants can thrive in a simple container garden in most parts of the United States.*



*Pictured: Sarracenia (pitcher plant) cultivar and Dionaea muscipula 'Dentate Traps' (Venus flytrap cultivar) on display in Jenkins Fountain on BBG's Lily Pool*



*A rigid pond liner is perfect for making a mini-bog*



# Growing Carnivorous Plants

## Instructions

### Step 1: Provide Drainage

Fill the bottom two inches of the pond liner with crushed lava rock for water space.

### Step 2: Make the Reservoir

Place your plastic nursery pot in the center of the pond liner. You will keep this pot empty and fill the container around the pot with soil. Once the mini-bog is complete, you will fill this pot with water, which will slowly drain out into the pond liner to bottom-water your plants.

This allows you to avoid top watering, which can disrupt small plants and compact the soil. The pot also functions as a bog-garden reservoir, reducing the need to water as frequently. Simply refill the pot when the water level drops to its bottom.

### Step 3: Prepare the Soil Mix

Create your growing medium by combining 50 percent sphagnum peat moss, 30 percent horticultural sand, and 20 percent long fiber sphagnum moss and saturating it with water until it has a mudlike consistency. Fill the planter (outside the plastic pot) with the soil mix.

If your mini-bog is to be viewed from all vantages, consider building the soil level higher toward the middle of the pond liner for visual appeal. Or vary the depth of the soil and then plant the lower areas with more flood-tolerant species like spoonleaf sundew and parrot pitcher plant (*Sarracenia psittacina*). Higher areas can be planted with less flood-tolerant species like Venus flytrap (*Dionaea muscipula*).

### Step 4: Select and Install Plants

Your mini-bog can include a mix of carnivorous plants and other species that thrive in bogs. When choosing carnivorous plants, cold hardiness is your biggest concern. If you live in Zones 7–10, you can grow Venus flytraps, most American pitcher plants (*Sarracenia* species), and most temperate and warm-temperate sundews (*Drosera* species) and butterworts (*Pinguicula* species).

If you live in Zone 6, focus on plants from the Carolinas and farther north, like trumpet pitcher plant (*Sarracenia flava*), sweet pitcher plant (*S. rubra*), and purple pitcher plant (*S. purpurea*).

If you live in Zone 5 or colder, you are limited to very cold-tolerant plants like the northern subspecies of purple pitcher plant (*Sarracenia purpurea* subsp. *purpurea*), round-leaf sundew (*Drosera rotundifolia*), English sundew (*Drosera anglica*), and common butterwort (*Pinguicula vulgaris*).

Regardless of your climate, there will be no shortage of options for beautiful bog plants to accentuate your carnivores. A succession of orchids is one great option and will add seasonal interest. Try grass pink (*Calopogon tuberosus*), which blooms in spring to early summer, followed by the late-summer-blooming nodding ladies' tresses cultivar 'Chadds Ford' (*Spiranthes cernua* var. *odorata* 'Chadds Ford').





# Growing Carnivorous Plants

Only purchase carnivorous plants and orchids from reputable nurseries and dealers. Poaching of wild carnivorous plants and orchids threatens the continued existence of these incredible botanical wonders.

Once you have selected and acquired your plants, think about placement. If your mini-bog will be viewed from all sides, you may want to plant your tallest species toward the center and then terrace down to shorter plants. If it's to be viewed primarily from one side, plant your tallest species at the back and install shorter plants in the front.

## Step 5: Top Dressing

Once you have installed your plants, you can top dress your mini-bog with pine needles, pine bark, quartz stone, or live sphagnum to add a sense of realism and protect your plants from the impact of heavy rain. Top dressing may also help protect your plants from marauding squirrels and birds.

## Care

### Watering

Water quality is always an important concern when growing carnivorous plants. Unless you live in a city like New York, where the tap water has less than 100 parts per million dissolved solids and a pH lower than 8, you should only irrigate your mini-bog with distilled water, reverse osmosis water, or rainwater.

When watering the mini-bog, fill the reservoir pot to the top and then let the water level drop to near the bottom over a period of days, so that oxygen can periodically permeate the soil. If you live in a very rainy region and you find that the mini-bog is constantly flooded, drill some holes in the side of the container about an inch below the surface of the soil to allow drainage.

### Light

Your mini-bog must be positioned where it will receive at least five to six hours of direct, unobstructed sunlight.

### Overwintering

For most carnivorous plants native to the United States, a winter dormancy period is required for long-term survival. If you are growing plants not winter hardy in your region, you may need to shelter your mini-bog during the winter while still allowing the plants to experience natural dormancy. At the outset of freezing temperatures, move the mini-bog to a sunny glassed-in porch or a windowed basement where it will be cool but protected. Alternatively, leave the mini-bog outside, but bury the pond liner so that its surface is at the same level as the ground, and then mulch the top with two to three inches of pine needles or straw.

Once established, your mini-bog will require minimal maintenance. Just weed and water the container, and you can expect your mini-bog to last for years. Flies and wasps, beware!

## Master Gardener Sidebar: Growing Predators in the Garden

The first time I had the opportunity to visit a carnivorous plant bog, I became infatuated with carnivorous plants. I never thought I would grow these quirky specimens in my garden; however, a few years later, I found a lone pitcher plant as part of a display of "pond adjacent" plants at a local nursery. It had long, elegant pitchers that gradually moved from apple green to rust red. I was enchanted, and it was cheap. Funny how many of my gardening adventures start that way!

I carefully brought the pitcher plant into our house for the next couple of winters, regularly watering it. Now that I know more about pitcher plants, I am amazed they tolerated the treatment I gave them. Luckily, I have a good friend whose sideline business was growing carnivorous plants. I eventually sent him a picture, and he identified it as a species of *Sarracenia*, a hardy pitcher plant native to the U.S.

He strongly advised me to water with distilled or rainwater only and to leave it outside in the winter with a layer of mulch instead of pampering it indoors. What a difference that made! My pitcher plant doubled in size, and I realized how much more fun it would be to incorporate it into my garden border. Last spring, I built my first mini bog featuring native pitcher plants, Venus fly traps, and sundews. I buried the container to blend into my garden border and overwintered the plants. I'm happy to report that most of the plants made it through the winter, thanks to a good layer of mulch, including two of the Venus fly traps, which are a bit iffy in our zone. If you love unusual plants or want a fun feature in your garden, I highly recommend experimenting with a carnivorous plant bog!



*Pictured: Venus fly trap  
Photo Credit: Caroline Boutard-Hunt*



# Introduction to Food Preservation

As summer progresses, we delight in our vegetable gardens, we visit the farmers markets regularly, or we head to a “pick your own” farm or orchard. Sadly, the growing season will inevitably end but that doesn't mean you cannot enjoy the bountiful harvest year-round. This article will highlight the most common means of preserving fruits and vegetables.



## FREEZING

Freezing is the method of choice for many fruits and most vegetables. Fruits are most frequently washed, then can be packed in 40% syrup before freezing. Vegetables are blanched in boiling water which cleans the produce, stops enzyme actions in the produce while preserving its color, texture and flavor and well as decreasing vitamin loss. It also wilts or softens vegetables and makes them easier to pack. Make sure to use enough water when blanching- 1-gallon of water per pound of vegetables is recommended. A blanching chart should be consulted to determine how long to blanch a given type of vegetable.

Once the vegetables have been blanched, they should be immediately immersed in ice water to halt the process and quickly cool the vegetables. Drain completely and pack in freezer bags (squeeze out excess air) or plastic freezer containers with approximately 1 inch of headspace. Vacuum packing is another great method to remove any air from the product which will increase quality and longevity.

## PICKLING

Pickling is the process of using brine to preserve food. Brines are made with either salt water, sugar water, lemon juice, or vinegar. A variety of herbs, as well as garlic, may be used to season the brine. The brine is then poured over the vegetables or fruit. Although lacto-fermented pickles are wonderful, they are a separate article, so we'll focus on quick-

pickling, salt-brine pickling, and the vinegar-brine soak and rinse method.

Quick pickling requires the pickling brine to be boiled first. Vegetables are washed and packed into sterile jars and the boiling brine poured into the jars, completely covering the vegetables (leaving ½ inch headspace). The jars are then immersed into a boiling water bath for the time specified in your recipe. This method is ideal for beets, cauliflower, corn relish and green beans. Either store in the refrigerator or follow a recipe which provides safe canning instructions.

The salt-brined pickling method is specifically for pickling vegetables and produce that have a high-water content such as cucumbers and cabbage. By ‘salting’ the produce before it is packed into the canning jars, you can draw some of the natural water content out of the produce. This allows the pickling liquid to soak deeper into the produce creating a better flavor, texture and shelf life.

The vinegar-brine soak-and-rinse method is similar to the salt-brined method above but requires an additional step to draw the maximum amount of water out of the produce by soaking, draining, and soaking again using a vinegar solution. Sometimes salt-water brine and plenty of sugar are also used in this process.

## SALT

Salting is not used as frequently as in the past but may be used for meats, fish, and some vegetables and fruits (think preserved lemons). The process involves supersaturating a food with a salt solution, refrigerating it for about a week, then salting the surface again before placing it in a cool, dry area to finish drying. Salt-preserved food is often vacuum sealed to enhance freshness.



Photo Credit: Getty Images

# Introduction to Food Preservation

## DEHYDRATING

Dehydration is a common method for preserving many fruits, vegetables, and herbs. Dehydrating can be accomplished in numerous ways, the most common being air drying, oven drying, and the use of a commercial dehydrator. In each case, the product is cleaned first before drying.

Herbs are tied together in bunches or bouquets and hung to dry in a cool, dark, and dry spot such as a basement or garage. Harvest herbs in the morning after the dew has dried for best results.

Fruits and vegetables are most often dried using an oven or dehydrator. Both work in a similar fashion, utilizing dry heat and air circulation to draw the moisture out of food. Fruit leathers, fruit and/or vegetable chips, and even mushrooms can be preserved using dehydration.

It is of utmost importance that dehydrated food be thoroughly dried and packed in clean airtight containers to avoid mold contamination or spoilage issues.



## CANNING

Water-bath canning is by far the most widely recognized method of food preservation, second only to freezing. Proper canning results in a product stored in the absence of bacteria and mold that could otherwise spoil the food. Canning is used for everything from jams and jellies to salsas and sauces.

It's extremely important to follow a tested recipe when canning, particularly low-acid vegetables such as green beans. Improper canning can lead to the growth of *Clostridium botulinum* (the bacteria that causes botulism) and possible toxin production, which can be life-threatening or even fatal. Not sure where to start? Try visiting the National Center for Home Food Preservation at <https://nchfp.uga.edu/> for tested recipes and tips for success.

*\*blanching times are for water blanching unless otherwise indicated.*

## CONCLUSION

Preserving food is easy, fun, and a great way to enjoy fruits and vegetables picked at their peak well after the growing season has ended. Recipes abound, which enable us to prepare and preserve nature's harvest.

## RESOURCES

There is a wealth of resources to draw from on food preservation. The following resources were consulted for this article, in addition to my own personal experience.

- \* **Center for Preserving Food**  
(<https://bit.ly/3CHUF9t>)
- \* **National Center for Home Food Preservation**  
(<https://bit.ly/3XmQzNm>)
- \* **Common Methods of Food Preservation**  
(<https://bit.ly/3CHUniT>)
- \* **Five Nutritious Ways to Preserve Your Summer Vegetables and Fruits**

## Blanching Times\*

(<https://bit.ly/3CHYifk>)

Vegetable	Blanching Time (minutes)
<b>Artichoke-Globe (<i>Hearts</i>)</b>	7
<b>Artichoke-Jerusalem</b>	3-5
<b>Asparagus</b>	
Small Stalk	2
Medium Stalk	3
Large Stalk	4
<b>Beans-Snap, Green, or Wax</b>	3
<b>Beans-Lima, Butter, or Pinto</b>	
Small	2
Medium	3
Large	4
Beets	cook
<b>Broccoli</b>	
( <i>flowerets 1 1/2 inches across</i> )	3
Steamed	5
<b>Brussel Sprouts</b>	
Small Heads	3
Medium Heads	4
Large Heads	5

Continued on Page 18



# Introduction to Food Preservation

Vegetable	Blanching Time ( <i>minutes</i> )
<b>Cabbage or Chinese Cabbage</b> ( <i>shredded</i> )	1 1/2
<b>Carrots</b>	
Small	5
Diced, Sliced or Lengthwise Strips	2
<b>Cauliflower</b> ( <i>flowerets, 1 inch across</i> )	3
<b>Celery</b>	3
<b>Corn</b>	
<i>Corn-on-the-cob</i>	7
Small Ears	9
Medium Ears	11
Large Ears	
<i>Whole Kernel or Cream Style</i> ( <i>ears blanched before cutting corn from cob</i> )	4
<b>Eggplant</b>	4
<b>Greens</b>	
Collards	3
All Other	2
<b>Kohlrabi</b>	
Whole	3
Cubes	1
<b>Mushrooms</b>	
Whole ( <i>steamed</i> )	5
Buttons or Quarters ( <i>steamed</i> )	3 1/2
Slices ( <i>steamed</i> )	3
<b>Okra</b>	
Small Pods	3
Large Pods	4
<b>Onions</b>	
( <i>blanch until center is heated</i> )	3-7
Rings	10-15 seconds
<b>Peas-Edible Pod</b>	1 1/2-3
<b>Peas-Field</b> ( <i>blackeye</i> )	2
<b>Peas-Green</b>	1 1/2
<b>Peppers-Sweet</b>	
Halves	3
Strips or Rings	2
<b>Potatoes-Irish (New)</b>	3-5
<b>Pumpkin</b>	cook
<b>Rutabagas</b>	3
<b>Soybeans-Green</b>	5
<b>Squash-Chayote</b>	2

Continued on Page 19

# Introduction to Food Preservation

Vegetable	Blanching Time ( <i>minutes</i> )
Squash-Summer	3
Squash-Winter	cook
Sweet Potatoes	cook
Turnips or Parsnips	
Cubes	2

Chart from "So Easy to Preserve", 6th ed. 2014. Bulletin 989, Cooperative Extension Service, The University of Georgia, Athens. Revised by Elizabeth L. Andress, Ph.D. and Judy A. Harrison, Ph.D., Extension Foods Specialists.

## Quick Fresh-Pack Dill Pickles

- 8 lbs of 3- to 5-inch pickling cucumbers
- 2 gals water
- 1¼ cups canning or pickling salt
- 1½ qts vinegar (5 percent)
- ¼ cup sugar
- 2 quarts water
- 2 tbsp whole mixed pickling spice
- about 3 tbsp whole mustard seed (2 tsp to 1 tsp per pint jar)
- about 14 heads of fresh dill (1½ heads per pint jar) or 4½ tbsp dill seed (1½ tsp per pint jar)



**Yield:** 7 to 9 pints

Please read **Using Boiling Water Canners** (<https://bit.ly/3JREIHh>) before beginning. If this is your first time canning, it is recommended that you read **Principles of Home Canning** (<https://bit.ly/44yWjpV>)

**Procedure:** Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave ¼-inch of stem attached. Dissolve ¾ cup salt in 2 gals water. Pour over cucumbers and let stand 12 hours. Drain. Combine vinegar, ½ cup salt, sugar and 2 quarts water. Add mixed pickling spices tied in a clean white cloth. Heat to boiling. Fill jars with cucumbers. Add 1 tsp mustard seed and 1½ heads fresh dill per pint. Cover with boiling pickling solution, leaving ½-inch headspace. Adjust lids and process according to the recommendations in **Table 1** or use the low- temperature pasteurization treatment. For more information see "**Low-Temperature Pasteurization Treatment**" (<https://bit.ly/44jy2UD>)

**Table 1.** Recommended process time for **Quick Fresh-Pack Dill Pickles** in a boiling-water canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Raw	Pints	<b>10 min</b>	15	20
	Quarts	<b>15</b>	20	25

This document was adapted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA, revised 2015.

Sourced from the University of Georgia National Center for Home Food Preservation website: [https://nchfp.uga.edu/how/can\\_06/quick\\_dill\\_pickles.html](https://nchfp.uga.edu/how/can_06/quick_dill_pickles.html)

Reviewed February 2018.



# Fall Garden Relish

- 1 quart chopped cabbage (about 1 small head)
- 3 cups chopped cauliflower (about 1 medium head)
- 2 cups chopped green tomatoes (about 4 medium)
- 2 cups chopped onions
- 2 cups chopped sweet green peppers (about 4 medium)
- 1 cup chopped sweet red peppers (about 2 medium)
- 3¾ cups vinegar (5%)
- 3 tablespoons canning salt
- 2¾ cups sugar
- 3 teaspoons celery seed
- 3 teaspoons dry mustard
- 1½ teaspoons turmeric

**Yield:** About 4 pint jars



Please read **Using Boiling Water Canners** (<https://bit.ly/3JREIHh>) before beginning. If this is your first time canning, it is recommended that you read **Principles of Home Canning** (<https://bit.ly/44yWjpV>)

**Procedure:** Combine washed chopped vegetables; sprinkle with the 3 tablespoons salt. Let stand 4 to 6 hours in the refrigerator. Drain well. Combine vinegar, sugar and spices; simmer 10 minutes. Add vegetables; simmer another 10 minutes. Bring to a boil.

Pack boiling hot relish into hot jars, leaving ½ inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened clean paper towel; adjust two-piece metal canning lids. Process in a **Boiling Water Canner**.

**Table 1.** Recommended process time for **Fall Garden Relish** in a boiling-water canner.

Style of Pack	Jar Size	Process Time at Altitudes of		
		0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	10 min	15	20

This document was adapted from "So Easy to Preserve", 5th ed. 2006. Bulletin 989, Cooperative Extension Service, The University of Georgia, Athens. Revised by Elizabeth L. Andress. Ph.D. and Judy A. Harrison, Ph.D., Extension Foods Specialists.

Sourced from the University of Georgia National Center for Home Food Preservation website: [https://nchfp.uga.edu/how/can\\_06/fall\\_garden\\_relish.html](https://nchfp.uga.edu/how/can_06/fall_garden_relish.html)



# Preserve Today, Relish Tomorrow



## UCCE Master Food Preservers of El Dorado County

311 Fair Lane, Placerville CA 95667

Helpline (530) 621-5506 • Email: [edmf@ucanr.edu](mailto:edmf@ucanr.edu) • Visit us on Facebook & Twitter!

# SHRUBS & SWITCHELS

While vinegar-based beverages may seem to be the current rage, humans have been drinking vinegar in various forms since antiquity, with records going back at least 4,000 years ago to the Babylonians. The sugar-sweetened versions we know today as shrubs can be traced to Turkey (the word *shrub* derives from the Arabic word *sharâb*, meaning “to drink”). By the time that drink made its way to colonial America by the very early 1700’s, it was in the modified form of a citrus and sugar syrup blended with either brandy or rum. Drinks known as *fruit vinegar*, consisting of fruit (especially raspberries), sugar and vinegar, became popular here at about the same time and by the mid-1800s also became known as shrubs.

Another early vinegar drink known as *switchel* arose in the Caribbean sometime in the 16<sup>th</sup> or 17<sup>th</sup> centuries. Made with vinegar, ginger, water and likely molasses, switchel came to colonial New England by the late 1600’s along with the molasses trade. Once there, honey and sometimes maple syrup – sweeteners readily available in New England – replaced the molasses. It was served to farmers, especially during hay-harvesting time, and thus switchel came to be known as “hay-maker’s punch.”

For various reasons, by the end of Prohibition shrubs fell out of favor. Now, with the advent of the craft cocktail and food preservation/DIY movements, shrubs are finding a renaissance. Whether you’re interested in making refreshing non-alcoholic adult soft drinks or creating a hot new cocktail, shrubs are versatile beverages that are easy to make at home and that can help you preserve the bounty of fresh, local fruits and herbs.

### Did You Know?

Research has shown that sour-tasting beverages are more thirst quenching. Why? Sour flavors stimulate salivation more than other flavors. Having a wet mouth helps you feel more hydrated, even once you’ve stopped drinking.

## Tools & Supplies for Making Shrubs

Most of the tools you’ll need to make shrubs are probably already in your kitchen: a mixing spoon; measuring cups and spoons; vegetable peeler and citrus zester; a good knife; funnel (optional but helpful); and a potato masher (also optional but helpful).

Specialty equipment include a fine-mesh strainer (made of plastic or stainless steel); fine weave cloth or paper coffee filters for straining liquids that have fine sediment that a strainer won’t catch; labels (either paper labels or freezer or painter’s tape); and perhaps a bottle brush if you plan on using narrow-topped bottles.

Covered bowls or jars will be necessary for mixing your shrubs, and you’ll need glass canning jars or bottles to store the finished product. Storage containers should be scrupulously clean: wash them in hot soapy water and then rinse thoroughly. Be sure to carefully wash lids and caps as well. Taking the extra step of sterilizing the jars or bottles may help prevent



contamination and extend the shelf life of your shrub, and is easy to do: simply place your jar in a deep pot (lined with a rack or trivet), fill with water to at least one inch above the top of the container, cover and bring to a full rolling boil over high heat. Once the water is at a boil, start timing and boil for 10 minutes at altitudes 1000 feet or less; add 1 minute for each additional 1000 feet of elevation. Remove the jars with tongs or jar lifters while they are still hot, tip out the water and shake out any excess. Fill the jars while they are still warm.

## Shrub Ingredients

**Fruit (and sometimes Vegetables):** Use produce at its peak of freshness for the best taste. Since the fruit will be chopped and then strained, “seconds” (produce with imperfections) will work just fine. Frozen berries can give good results as well. Wash all fruit and vegetables (see the food safety section above) and drain well, and be sure to discard any moldy produce. If using citrus, choose unwaxed fruit or remove the wax before zesting the skin.

**Sweeteners:** Basic sugars, like white cane or raw cane, work well in shrubs and provide the most clarity and neutral sweetness. Other sugars, such as brown, turbinado, maple, coconut, etc., can also be used successfully, but keep in mind that each will bring its own flavor profile and may affect the color of the finished shrub. Also be aware that some sugars are sweeter than others (for example, maple sugar is twice as sweet as white granulated sugar).

*TIP: To make turbinado and other large-crystal sugars easier to dissolve, whirl briefly in a spice mill or coffee grinder.*

Other sweeteners such as honey, molasses, and maple syrup may also be used, however these sweeteners can be strongly flavored. Honey in particular is sweeter than sugar and can make liquids cloudy, so use restraint and adjust to taste.

**Vinegar:** White distilled vinegar has a harsh taste and is not recommended for shrubs, but most any other vinegar will do. Choose your vinegar to complement the type of fruit (or vegetable) you’re using for your shrub, and feel free to experiment with blends of different vinegars. If you perform the initial vinegar infusion outside of the refrigerator, be sure to choose a vinegar with at least 5% acidity (the acidity level can be found on the label).

*Apple Cider Vinegar:* This is a great all-purpose vinegar that works with many fruits, especially pome fruits, peaches and plums.

*White Wine and Champagne Vinegars:* These vinegars work well with stone fruits and other delicately flavored fruits.

*Red Wine Vinegar:* This vinegar works well with cherries and berries, and is good blended with other vinegars for a smoother taste.

*Balsamic Vinegar:* Balsamic is very rich and may overpower some fruits, but it does pair well with strawberries and cherries. White balsamic is a good option for stone fruits.

*Rice Vinegar:* This vinegar is less acidic and has a milder flavor than most wine vinegars. It is good with herbs and some vegetables. It generally is less than 5% acidity however, so be sure to infuse any shrub using rice vinegar in the fridge.

**Herbs & Spices:** Use very fresh herbs and discard any bruised or damaged leaves. Wash gently (see the food safety section above) and dry thoroughly. For additional safety, herbs can be sanitized by dipping them in a bleach solution (1 teaspoon of plain chlorine bleach in 6

cups of water) and then rinsing thoroughly under cold water and patted dry with a clean paper towel. Dried herbs can often be substituted for fresh (use about half the amount).

When it comes to spices, just like in cooking, freshness counts. Check to see that your spices are not stale. When crushing or grinding whole spices, it's best to do so just before using.

### The Basic Procedure for Making a Shrub

There are several methods for making shrubs, but in this class we'll be using the cold process, which is not only easy but because there is no cooking involved, results in a shrub with a full, fresh fruit flavor.

The basic process involves making a fruit syrup by combining fruit and sugar and letting that macerate for about 24 hours, straining off the solids, and combining the syrup with vinegar. It's that simple!

A common "formula" for shrub is a ratio of 1:1:1 fruit/sugar/vinegar (equal parts of fruit, sugar and vinegar). Another basic ratio is 2:1:1 fruit/sugar/vinegar (2 parts fruit, one part sugar, and one part vinegar). There is no set rule, so follow your taste buds – you may prefer your shrub on the sweet side or on the tangy end of the spectrum. Review the recipes below for the basic process and use them as a springboard for your own creations.

### Shrub Storage

Shrubs should be stored in the refrigerator, where they will keep for up to a year. Always check your shrub before consuming it, and if there are any signs of mold, or if the shrub starts to look bubbly, cloudy or slimy, throw it away. **When in doubt, throw it out.**

## SHRUBS & SWITCHEL RECIPES

### Apricot Shrub

*A very basic fruit shrub, which can be modified by adding spices or herbs to the vinegar.*

*Recipe slightly adapted from: Shrubs by Michael Dietsch*

1 lb. apricots, pitted and sliced

$\frac{3}{4}$  cup sugar

$\frac{3}{4}$  cup apple cider vinegar

1. Mix apricots and sugar together in a bowl. Mash with a potato masher or the back of a big spoon.
2. Cover the bowl and refrigerate for 24 hours.
3. Pour the apricot mixture through a fine-mesh strainer into another bowl, pressing on the fruit to extract the liquid. Discard the solids (or save them for another use).
4. Add the vinegar to the fruit mixture, stirring well to make sure all of the sugar has dissolved.
5. Transfer the shrub to a clean jar or bottle and seal with a lid or cap. Label and date the jar or bottle.
6. Place the jar in the refrigerator, and wait one week before using.
7. Keep the shrub stored in the fridge for up to a year.



## **Raspberry Shrub**

*Another basic fruit shrub, this one using the 1:1:1 formula and a blend of vinegars.*

*Recipe slightly adapted from: Wild Drinks and Cocktails by Emily Han*

2 cups raspberries  
1 cup Champagne vinegar  
1 cup red wine vinegar  
2 cups sugar

1. Lightly crush the berries with a potato masher or the back of a big spoon.
2. Transfer the crushed berries, including their juice, to a 1-quart mason jar.
3. Pour both vinegars over the fruit and stir to mix. Make sure the berries are completely submerged under the vinegar.
4. Cover the jar and store in a cool, dark place for 1 week. Shake the jar daily, and check to make sure that the berries stay submerged under the vinegar.
5. Strain the raspberry-vinegar mixture through a fine-mesh strainer into another glass jar or bottle. Discard the solids.
6. Add the sugar to the vinegar and stir well.
7. Place the jar in the refrigerator for 1 week, stirring or shaking daily to dissolve the sugar.
8. Keep the shrub stored in the fridge for up to a year.

## **Peach-Ginger Cinnamon Shrub**

*Fresh peaches get spiced up with the addition of ginger and cinnamon.*

*Recipe slightly adapted from: Shrubs by Michael Dietsch*

6 ripe peaches (about 1 ½ lbs), pitted and cut into chunks  
 $\frac{2}{3}$  cup grated ginger  
1 cup sugar  
1 cinnamon stick  
1 cup white wine vinegar

1. Crush the peaches in a bowl. Add the grated ginger and sugar and mix well.
2. Cover the bowl and refrigerate for 24 hours.
3. Meanwhile, place the cinnamon stick and vinegar in a glass jar or other nonreactive container. Cover and allow to infuse for 24 hours.
4. Pour the peach mixture through a fine-mesh strainer into another bowl, pressing on the fruit to extract the liquid. Discard the solids (or save them for another use) .
5. Remove the cinnamon stick from the vinegar, then add the vinegar to the strained fruit mixture. Stir well to make sure all of the sugar has dissolved.
6. Transfer the shrub to a clean jar or bottle and seal with a lid or cap. Label and date the jar or bottle.
7. Place the jar in the refrigerator and wait one week before using.
8. Keep the shrub stored in the fridge for up to a year.

## **Sungold Tomato and Basil Shrub**

*A pretty golden-orange shrub that's on the savory side with the addition of fresh basil. Other tomatoes can be substituted.*

*Recipe slightly adapted from: Shrubs by Michael Dietsch*

1 lb. Sungold tomatoes  
½ cup turbinado sugar  
15-20 fresh basil leaves (about ½ ounce)  
½ cup apple cider vinegar

1. Cut the tomatoes in half. Add them to a bowl along with the sugar and mix well.
2. Cover the bowl and refrigerate for up to 2 days.
3. Meanwhile, gently bruise the basil leaves to release their essential oils. *(To bruise basil leaves, place a leaf in the palm of one hand, and with the other give the leaf a sharp slap.)* Place the leaves and the vinegar in a glass jar or bowl, cover, and store in a cool, dark place for up to 2 days.
4. In a large glass jar, combine the tomato mixture (including any accumulated juice) and the vinegar mixture. Stir or shake well to combine.
5. Place the jar in the refrigerator for one week.
6. Pour the tomato-vinegar mixture through a fine-mesh strainer into a bowl, pressing lightly to extract the liquid. Discard the solids.
7. Transfer the shrub to a bottle or jar and store in the fridge for up to a year.

## **Honey Switchel**

¼ cup apple cider vinegar  
1 tbsp minced or grated ginger  
1 tsp lemon juice  
2 tbsp honey, or to taste

1. Add all ingredients to a one-quart mason jar. Fill to about 1 inch below the rim with fresh filtered water. Stir well to combine all ingredients.
2. Cover the jar and let sit at room temperature or in the refrigerator overnight.
3. Pour the switchel through a fine-mesh strainer to remove the ginger into another jar or storage vessel.
4. Drink the switchel as is or served over ice. You can also mix it with a bit of sparkling water. Store leftover switchel in the refrigerator for up to a week.



## HOW TO USE YOUR SHRUBS

For a refreshing soft drink, add a tablespoon or more to taste to a glass. Add ice and top with sparkling water or club soda (or still water if you prefer). To make a simple cocktail with your shrub, mix  $\frac{3}{4}$  ounce shrub and 2 ounces of your preferred liquor in a glass. Add ice if desired, then top with club soda or sparkling water. Adjust to taste, then enjoy responsibly.

Shrubs can be used for more than just drinks. Drizzle over ice cream for a sweet & tangy topping, or use it to make a vinaigrette.

*The information in this handout is provided as a courtesy to the reader. No endorsements of commercial products are made or implied, nor is criticism implied of similar products or information from companies not listed. Products are intended for home use only.*

### Resources:

National Center for Home Food Preservation. <http://nchfp.uga.edu>

Dietsch, Michael. *Shrubs: An Old-Fashioned Drink for Modern Times* (2<sup>nd</sup> Ed.)

Han, Emily. *Wild Drinks and Cocktails: Handcrafted Squashes, Shrubs, Switchels, Tonics, and Infusions to Mix at Home*

Coopey, Erin. *Infusing Flavors*

The University of California, Division of Agriculture and Natural Resources (UC ANR) prohibits discrimination against or harassment of any person in any of its programs or activities on the basis of race, color, national origin, religion, sex, gender, gender expression, gender identity, pregnancy (which includes pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition (cancer-related or genetic characteristics), genetic information (including family medical history), ancestry, marital status, age, sexual orientation, citizenship, status as a protected veteran or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994 [USERRA]), as well as state military and naval service. UC ANR policy prohibits retaliation against any employee or person in any of its programs or activities for bringing a complaint of discrimination or harassment. UC ANR policy also prohibits retaliation against a person who assists someone with a complaint of discrimination or harassment, or participates in any manner in an investigation or resolution of a complaint of discrimination or harassment. Retaliation includes threats, intimidation, reprisals, and/or adverse actions related to any of its programs or activities. UC ANR is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment and/or participation in any of its programs or activities without regard to race, color, religion, sex, national origin, disability, age or protected veteran status. University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's equal employment opportunity policies may be directed to: John I. Sims, Affirmative Action Compliance Officer and Title IX Officer, University of California, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618, (530) 750-1397. Email: [jsims@ucanr.edu](mailto:jsims@ucanr.edu). Website: [http://ucanr.edu/sites/anrstaff/Diversity/Affirmative\\_Action/](http://ucanr.edu/sites/anrstaff/Diversity/Affirmative_Action/)

# About Us

The Master Gardener Program is a national program of trained volunteers who work in partnership with their county Cooperative Extension Office to share information throughout the community.



Master Gardeners are neighbors teaching neighbors about landscapes, vegetables, fruits, herbs, houseplants, beneficial and harmful insects, plant diseases, integrated pest management, wildlife management, soils, birds, composting, water conservation, and much much more.

Master Gardeners are considered researchers rather than experts. They participate in 40 hours of training provided by experienced staff from Cornell Cooperative Extension to gain a basic understanding of horticulture and available horticultural information and online resources. Course topics include plant nutrition, soils, vegetable, fruit culture, trees, shrubs, lawns, diseases and insects that affect plants, pruning and more.

You don't need to be an expert to join, if you enjoy gardening as a hobby, this may be perfect for you.

To become a Master Gardener, all you need to do is attend a 10-week training offered by Cornell Cooperative Extension.

For more information, please call us at 315-536-5123!

## Cornell Cooperative Extension Yates County

417 Liberty Street  
Penn Yan, NY 14527

<http://yates.cce.cornell.edu>

 [facebook.com/CCEYates](https://facebook.com/CCEYates)

 [@CCEYates](https://twitter.com/CCEYates)

 [YouTube bit.ly/CCEYates](https://bit.ly/CCEYates)

*"Cornell Cooperative Extension is an employer and educator recognized for valuing AA/EEO, Protected Veterans, and Individuals with Disabilities and provides equal program and employment opportunities"*