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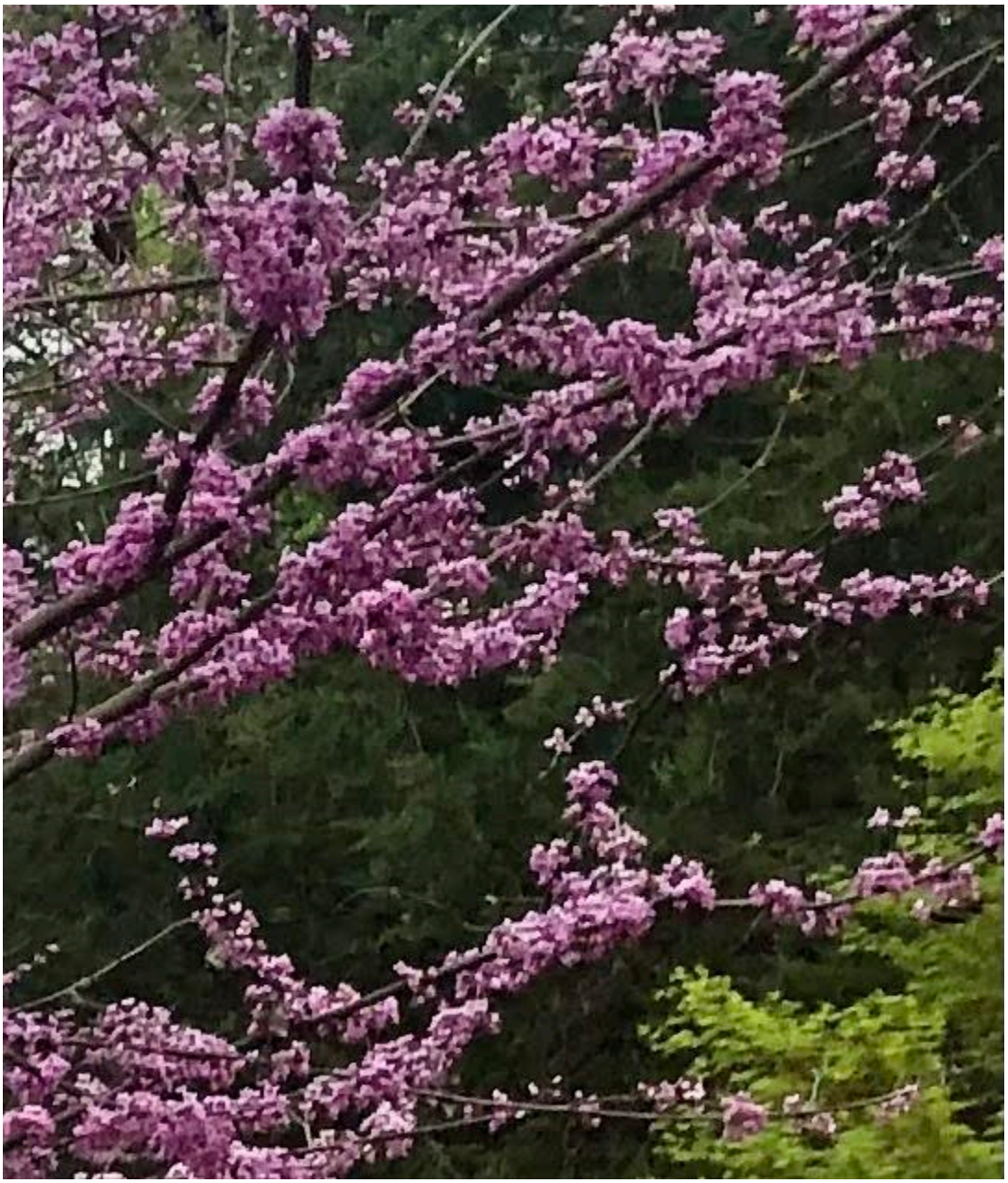

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A Fertilization Primer: Plant Needs, Fertilizer Choices and Application Tips

By Ralph Morini | April 2021-Vol.7, No.4

Gardeners understand that plants uptake nutrients from soil as they grow and that those soil elements must be replenished to avoid depletion over time. Nature's method for maintaining soil health is to allow dead organic matter to decompose and re-enter soils through the action of soil organisms. For the past hundred plus years, conventional agriculture has departed from natural practices, relying on synthetic manufactured fertilizers to deliver specific elements to plants, while in many cases, neglecting soil health. Recently, organic and regenerative growers have returned to natural soil-building practices and have increased the use of natural amendments in place of synthetics. Natural fertilizer choices include raw and processed organic materials, whose source material derives from formerly living plants and organisms as well as natural minerals.

What is the best way to fertilize? Let's take a look at soil and plant needs, fertilizer options, and application guidelines.

Plant Nutrient Requirements

What are plants made from and where do they get needed nutrients? After removing moisture, plants are:

- 80-90% carbon and oxygen and about 6% hydrogen. Plants get these elements from the atmosphere by taking in carbon dioxide during photosynthesis, and from rain absorbed from the soil through root systems.
- 3 to 12% comes from 6 **macronutrients,** including nitrogen, phosphorus, potassium, calcium, magnesium, and sulphur. These elements come mostly from the soil.
- About 0.5% is composed of 8 or more **micronutrients** whose amounts are measured in parts per million, a small but essential requirement. Micronutrients include iron, chlorine, manganese, boron, copper, molybdenum, nickel and cobalt. They are generally available in soils.

The macronutrients, most notably nitrogen, are the soil elements that need consistent replenishment.

Identifying the Needs

There are drawbacks to both over- and under-fertilizing. Too few nutrients can lead to slow growth and poor plant health. But too much nitrogen can cause excessive vegetative growth at the expense of fruiting. Excessive or poorly distributed synthetic nitrogen fertilizer can lead to plant "burning" as excessive soil salts draw moisture from plant roots, causing dehydration. Finally, synthetic nitrogen solubility makes it susceptible to leaching, a significant cause of waterway pollution. The Virginia Cooperative Extension publication Fertilizing the Vegetable Garden **can help identify symptoms of macronutrient deficiencies.**

In addition to nutrient content, soil pH should be managed. Excessive acidity or alkalinity affects plants' ability to uptake needed nutrients from the soil. Most plants prefer a pH in the 6-7 range. If pH is below about 5.7, lime additions are recommended, which will help reduce acidity. If above 7, sulphur additions can reduce alkalinity.

How do we know what and how much to add to soils? The best way is to periodically perform a soil test — about every three years. Tests from the Virginia Cooperative Extension are inexpensive and easy to execute, as explained in Soil Sampling for the Home Gardener/VA Tech. The test reports provide information on soil nutrient content and pH, along with instructions for remedying any identified issues. Nitrogen content is **not** noted in soil tests due to its ability to quickly move through the soil, which makes snapshots of N content of limited value. Nitrogen additions can be estimated based on other soil amendments applied and the plants being grown. Direct questions about soil samples to the local VCE help desk.

What All Gardeners Should Do

Regularly following proven natural soil building practices is the best way to maintain baseline soil health. These include:

- Regularly adding organic matter to all soils. The organic matter can include purchased or home-made compost, non-pet manures, and organic mulches such as wood chips, leaf mold, sawdust, etc.
- Crop rotations, which reduce soil disease and balance nutrient demands.
- Cover cropping, especially with mixed plantings, which build structure, may add nitrogen, and provides green manures and mulch materials.
- Minimizing tilling and soil disruption to maintain soil structure and reduce carbon loss to the atmosphere.

These practices add nutrients, reducing fertilization needs while building soil structure, improving water

infiltration, oxygen availability and moisture-holding capacity. They also reduce nutrient leaching and stabilize pH.

Fertilizer Math: Interpreting Package Labels

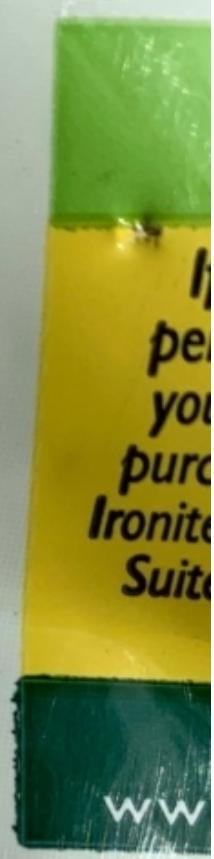
While the chemical content of raw soil amendments, like manures, are not identified, processed fertilizers, both synthetic and natural, list their contents on package labels. The headline numbers, referred to as N-P-K, list the key macronutrient elements of Nitrogen (N), Phosphorus (P) and Potassium (K).

For example, the fertilizer in the photo below is a 12-10-10, which means it is 12% nitrogen (ammonia), 10% phosphorus (phosphate) and 10% potassium (potash) by weight. This information is used to calculate how much fertilizer to use.

oil before planting.

PERENNIALS: Apply 3 pounds to 100 square feet when spring gr
with a slow soaking that will thoroughly soak the soil to a depth o

GUARANTEED ANALYSIS:	12-10-10
Total Nitrogen (N)	12%
12.0% Ammoniacal Nitrogen	
Available Phosphate (P_2O_5)	10%
Soluble Potash (K_2O)	10%
Sulfur (S)	9%
9.0% Combined Sulfur (S)	
Boron (B)	0.02%
Iron (Fe)	2.0%
Manganese (Mn)	0.10%
0.03% Water Soluble Manganese (Mn)	
Molybdenum (Mo)	0.0005%
Zinc (Zn)	0.10%
0.02% Water Soluble Zinc (Zn)	



Derived from Ammonium Sulfate, Ammonium Phosphate, Muriate of Potash, S
Iron Sucrate, Iron Oxide, Manganese Sulfate, Manganese Oxide, Sodium Molyb
Sulfate, Zinc Oxide.

1525

CAUTION: Contains Molybdenum. The application of fertilizing materials co
Molybdenum may result in plants containing levels of molybdenum which are
ruminant animals.

CAUTION: Boron is recommended for all
however, excessive

Fertilizer label. Photo: Ralph Morini

The soil test report pictured below recommends fertilizer application quantities for several different fertilizer products, which all calculate to the same net nitrogen addition. Note that the P and K measurements in the report are very high (VH), so the recommended additions include **no** P and K. In this case, the Virginia Tech Soil Lab has quantified the recommendations into "cups" of different fertilizer blends, making measurement of how much to add straightforward.

SAMPLE HISTORY

Sample ID	Field ID	LAST CROP		LAST LIME APPLICATION		SOIL INFORMATION				
		Name	Yield	Months Prev.	Tons/Acre	SMU-1 %	SMU-2 %	SMU-3 %	Yield Estimate	Productivity Group
VEGBD				18+						

LAB TEST RESULTS (see Note 1)

Analysis	P (lb/A)	K (lb/A)	Ca (lb/A)	Mg (lb/A)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	B (ppm)	S.Salts (ppm)
Result	148	528	2319	168	6.7	50.8	1.8	62.5	0.4	
Rating	VH	VH	VH	H-	SUFF	SUFF	SUFF	SUFF	SUFF	

Analysis	Soil pH	Buffer Index	Est.-CEC (meq/100g)	Acidity (%)	Base Sat. (%)	Ca Sat. (%)	Mg Sat. (%)	K Sat. (%)	Organic Matter (%)
Result	7.1	N/A	7.2	N/A	100.0	80.9	9.7	9.4	

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: VEGETABLE GARDEN (210)

619. Lime recommendations: NONE NEEDED.

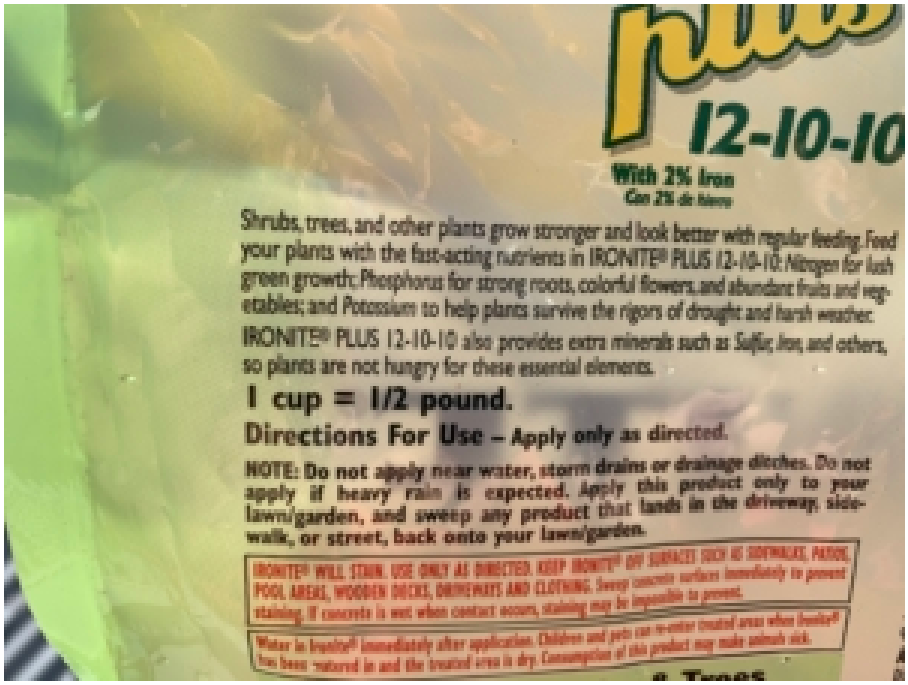
null

991. "Explanation of Soil Tests, Note 1" and other referenced notes are viewable at www.soiltest.vt.edu under Report Notes.

225. FERTILIZER RECOMMENDATIONS: Apply a nitrogen-only fertilizer, such as one of the following amounts per 100 sq. ft. --- 1.25 lbs (2 cups) of nitrate of soda (16-0-0) or 1.33 lbs (2 2/3 cups) of calcium nitrate (15-0-0) or 1.0 lb (2 1/2 cups) of ammonium sulfate (21-0-0) or 0.4 lbs (1 cup) of urea (46-0-0). Do not over fertilize! These products will burn plants at high rates! If you are unable to find one of these fertilizers, apply a turf-type (lawn maintenance) fertilizer that is high in nitrogen with little or no phosphorus and potassium at a rate close to 0.2 lb of nitrogen per 100 sq. ft., such as applying two-thirds of a pound of either 26-0-2 or 32-0-4. For additional information on fertilization, see Note 19.

Soil test report: Photo: Ralph Morini

What is important to understand is that 1.33 lbs. of 16-0-0 fertilizer means that 16% of 1.33 lbs. or about 0.21 lbs. of N per 100 square feet is the recommended N addition. **The quantity of about 0.2 lbs. of nitrogen per 100 sq. ft. is a standard addition** in the absence of better guidance.



Synthetic fertilizer: One Cup = 1/2 lb Photo: Ralph Morini

Another good rule of thumb is that **pelletized fertilizers typically weigh about ½ lb. per cup**.

Suppose you have **not** had a recent soil test, and want to add the standard recommended amount of nitrogen to your garden — 0**.2 lbs. of nitrogen per 100 sq. ft.** Let's figure out how much 14-0-0 Blood Meal to add to a 4'x8' raised bed at 0.2 pounds of N per 100 sq. ft.:

- Dividing the 0.2 lbs. Nitrogen we want to add by 0.14, the percentage of blood meal that is Nitrogen, tells us we need to add 1.43 lbs. of blood meal per 100 sq. ft.
- Since our 4×8 foot raised bed is 32 sq. ft. (32% of the 100 sq. ft. in the base recommendation), multiply the 1.43 lbs. x 0.32 to determine that we want to add 0.46 lbs. of blood meal to the bed.
- Since we know that pellet fertilizers weigh about 0.5 lbs. per cup, we need to add slightly less than 1 cup of the blood meal to the bed.
- Remember, it's best to round down in quantity, especially if you regularly add compost or other organic matter to your soil.

In the absence of a soil test, the usual recommendation is to use a balanced fertilizer like a 5-10-5 or 10-20-10 at the rate of 2-3 lbs. (4-6 cups) per 100 sq. ft. But for the soil analyzed in the soil test report pictured above, this would be a bad idea because of the high P and K levels in the soil. Excessive P and K can restrict plant access to other essential nutrients. Hence the advisability of regular testing.

Synthetic Fertilizers

When mechanized farming took hold in the early 1900s, demand for nitrogen fertilizers quickly outstripped organic fertilizer supply. This led to development of a process that extracted nitrogen from the atmosphere to create ammonia (NH3-) that could be further processed into a soluble form of nitrogen that was plant usable. This combination increased agricultural production dramatically, at the same time the world population nearly quadrupled from 2 billion in 1900 to nearly 8 billion people today. That is the positive side.

The negative side is that synthetic fertilizers provide plants the nutrients they need, but neglect soil health. They don't replenish the organic matter that sustains soil organisms, potentially leading to a long term breakdown of soil properties. When combined with careless land management, disasters like the Dust Bowl result. Synthetic fertilizers certainly have their place, but complete reliance on them without good soil management leads to trouble.

Because synthetics are water soluble as applied, they can be fast acting. This may be an advantage for new plants that would benefit from a quick application of nitrogen. But their immediate solubility makes them subject to leaching, which removes the nutrient from the soil and can pollute ground and surface water. Being careful to add appropriate amounts of amendment and using slow-release products where possible can reduce the risk of runoff.

Synthetic fertilizers are available in a variety of forms:

- Granules: the most-used type. Easy to apply. Care is required not to over-apply.
- Spikes: convenient but materials tend to concentrate around the spike. Expensive.
- Liquids and mixable powders: Good for houseplants and as a starter for transplants.
- Foliar: Powders mixed with water and sprayed on plants. Provides a quick growth response, but benefits are as short as a couple of days. Overuse can harm plants.

Don't use lawn fertilizers in gardens. The herbicides they may contain can kill desirable plants.

Natural Fertilizers

Organic fertilizer label. Photo: Ralph Morini

“Organic“ and “natural” fertilizers are derived from materials from formerly-living plants or organisms and from natural minerals. They differ from synthetics in that they must be decomposed into their inorganic chemical form before they are accessible to plants. They feed soil organisms and help improve soil texture and structure, improving water infiltration as well as moisture- and nutrient-holding capacity. They are not instantly soluble. It may take a couple of weeks for soil organisms to break down a natural fertilizer into a plant-available form. Natural fertilizers typically offer a fraction of their nutrient content to plants in the first year and continue to benefit plants in future years. Using natural fertilizers is not a once and done action. It is a component of a longer term commitment to building and maintaining healthy soils.

This publication from the Oregon State Extension lists the N-P-K content of some common organic soil amendments.

While synthetic fertilizers are manufactured with a planned mix of nutrients, organic materials are as nature makes them. This may require blending multiple amendments to reach a balanced nutrient mix.

Unprocessed or raw organic amendment content varies by age, whether they were composted, subject to leaching, and other factors. An important but unmeasured component is organic matter, an additional benefit to soil. Using composted raw products and understanding their source is a good way to minimize concerns about pathogens and other undesirable content.

Multi-component natural fertilizer blend. Photo: Ralph Morini

There are commercially available blends of organic fertilizers that provide balanced nutrients. The product in the photo above contains multiple ingredients to reach its 5-3-3 N–P-K analysis.

Controversial Amendments

There are a couple of organic amendments that deserve special mention:

- **Biochar** is a charcoal-like product that comes from burning materials like wood, crop residue, and manure in a low-oxygen, high-temperature environment. Contents vary based on feedstock and combustion process. All are high in carbon and when added to soil, increase soil porosity,

aiding water infiltration and storage, oxygen availability, nutrient retention, and microbial colonization. It does not provide nitrogen and can even cause a nitrogen deficiency immediately after addition due to microbial proliferation. It increases soil alkalinity. Agricultural productivity studies show variable results for biochar, depending on source material, soil condition, and crops grown. It is being studied as a way to sequester large amounts of carbon in soil.

Adding small amounts of commercially available biochar to garden soil is unlikely to do harm and does help certain soil characteristics. It is unclear whether it positively impacts plant health, but is a useful component of a thoughtful soil building program. It is not a balanced fertilizer.

- **Bio-Solids** are the generic name for processed sewage sludge that is used as a soil amendment. Processing includes either heat drying at temperatures of 176°F to 1000°F or hot composting at greater than 131°F to kill pathogens. The EPA classifies biosolids as Class A or B, with Class A meeting the most stringent pollutant, pathogen and vector attraction requirements. Class B biosolids require a permit for field application. Class A products may be applied to farm fields without permitting. The cleanest products are called Class A: EQ (Exceptional Quality) and may be bagged and sold to homeowners without restriction.

Biosolids add nitrogen, phosphorus and organic matter to soil. They improve soil structure and conserve landfill space. When applied, they may have a distinctive odor which typically fades away fairly quickly and is not in any way harmful.

"Milorganite" by Beige Alert is licensed under CC BY 2.0

Milorganite is an example of a commercial biosolids product that is marketed to home gardeners. It is a heat dried product that is produced by the Milwaukee Metro Sewer district. There are multiple products in the Milorganite portfolio, but a typical analysis is 6-4-0.

There is still controversy over the agricultural use of biosolids. They are disallowed in the USDA organic certification program. EPA is currently studying their contents and environmental impact. While they contain many elements that build soil health and provide a productive way to dispose of human wastes, some maintain that they pose a risk of contaminating and further degrading our farmland. The debate continues.

Application techniques

Tips on applying fertilizers include:

- Read and follow package directions.
- For raised beds and intensive planting patterns, broadcast pellets, taking care not to concentrate it in holes or bands. Incorporate it into the top few inches of soil.
- For row plantings use a side dressing technique. Fertilize along both sides of rows, a few inches from stems to avoid burning plant roots. Allow roots to reach for the nutrients.
- Synthetic fertilizers are water soluble and become plant-accessible quickly when wet. This also means that they can leach away in a heavy rain. Better to make multiple small applications than one big one.
- Organic fertilizers are made plant-available as they are broken down by soil organisms. Most are activated over multiple years rather than immediately. The organisms require air and water to do their work. Moistening incorporated fertilizer gets the process started.
- It can make sense to use a small dose of a synthetic for immediate impact with a larger application of an organic material for steady longer term benefit.

To Sum Up...

The key things to remember about smart fertilization include:

- Start with good soil management practices to maximize plant health and minimize needed fertilizer additions.
- Get a soil test every few years to be certain you are adding what your plants need.
- Organic or natural fertilizers add to soil health while feeding plants. They are a good component of a long term soil management effort.
- Synthetics are quick acting and can provide plants what they need, but in the absence of a good soil management approach, can lead to soil degradation.
- In the absence of a soil test, follow fertilizer package directions regarding quantities and application techniques. Err on the low side.
- Since fertilization intends to replace nutrients taken from the soil by plants, multiple plantings per year, spring and fall for example, require fresh applications.

Sources:

North Carolina Extension Gardener Handbook:
https://content.ces.ncsu.edu/extension-gardener-handbook/1-soils-and-plant-nutrients

"How To Convert an Inorganic Fertilizer Recommendation to an Organic One," Univ.of Ga Extension Pub.No.C853

"Here's the Scoop on Chemical and Organic Fertilizers," Oregon St. Ext. oregonstate.edu

"Using Biochar in the Garden," Univ.Arizona Ext. Backyard Gardener (2020)

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"Basic Information about Biosolids," U.S. Environmental Protection Agency,
https://www.epa.gov/biosolids/basic-information-about-biosolids

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Foliar Nematodes

By Cathy Caldwell | April 2021-Vol.7, No.4

Last spring, I started noticing odd oblong spots on my Solomon's seal (*Polygonatum odoratum).* At first, I wasn't worried, merely curious. Then some of the spots morphed into slits in the leaves.

In June, similar oblong spots appeared on a lily of the valley, followed by dark spots on ferns and brownish-purple spots on my beloved geraniums (*Geranium macrorrhizum* and *Geranium* x *cantabrigiense 'Biokovo').* Before long, I was spending much time studying not only my plants, but also hunched over my computer trying to get a handle on this mystery.

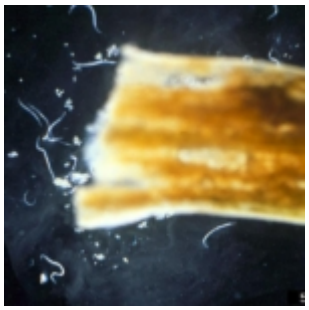
My research suggested that the Solomon's seal and lily of the valley were infected with something called foliar nematodes. Foliar nematodes — what were they? I wanted confirmation, so I enlisted the Help Desk at the Extension

Office, which called in the cavalry in the form of the Plant Disease Clinic at Virginia Tech. The diagnosis: foliar nematodes. The official report had an apologetic tone, something I now fully understand, because, as one authority puts it, "little can be done to salvage a plant that is already infested" with foliar nematodes. Univ.of Florida Dept.of Entomology & Nematology. This was devastating news.

Linear damage from foliar nematodes on Solomon's seal. Photo: Cathy Caldwell

The upshot was that most of the perennials in my front garden were infected, including my mainstay geraniums, my huge swaths of stinking hellebores, and ostrich ferns. The only advice was to pull up and destroy infected plants, which would denude the garden I had created and tended for years. This felt like a tragedy, but in the midst of the pandemic, any diagnosis other than Covid-19 seemed like a lesser matter.

Author's front garden before the foliar nematode attack. Photo: Cathy Caldwell



Foliar Nematodes under the microscope. Photo: Karen Snover-Clift, Cornell University, Bugwood.org

As time went on, I learned a lot about foliar nematodes, and I'm eager to share what I've learned with other gardeners. As I've discovered, if you're armed with the best information, **you can spot foliar nematodes early on and prevent widespread damage.** Let's start with the basics.

Foliar nematodes are one kind of tiny parasitic roundworm, of which there are many:

> ***You may think humans own the planet. You'd be wrong. Worms like this one are Earth's animal overlords; nematodes are the most numerically abundant animals on Earth. They're not just a slim majority. Four out of every five animals on Earth is a nematode.***
>
> *— "Nematode Roundworms Own This Place," Scientific American*

So the earth teems with nematodes. There are also many types of nematodes — including the root-knot nematodes with which you may be familiar; they attack the roots of plants. But foliar nematodes attack the foliage and stems, basically "eating" the cell tissue using a needle-like mouth part called a stylet. There are several nematode genera that feed on foliage and stems, but it is the genus *Aphelenchoides* that impacts some food crops and many garden plants. The primary threats are *Aphelenchoides fragariae*, *Aphelenchoides ritzemabosi*, and *Aphelenchoides besseyi*, with the *A. besseyi* species more common in tropical regions, and the *A. fragariae* and *A. ritzemabosi* more common in temperate regions.

These three species of *Aphelenchoides* feed on the host plant's surface or enter leaves through open stomata (natural openings, like pores in the leaf surface). To migrate outside the leaf, they are dependent upon water; any time a film of water is present on a leaf from irrigation, rain, or even dew, the nematodes can move to another location on the plant, or, more worryingly, to a nearby plant. The role of water in nematode migration is a key fact for gardeners, and it's the source of the primary advice for gardeners with foliar nematodes: stop overhead irrigation. Research indicates that nematode populations increase during late spring and late fall when the air temperatures are moderate and relative humidity is high, and also during rainy periods. Since their reproductive cycle is very short, populations can increase rapidly.

Foliar nematodes have a huge host range; they have been found on over 700 species of plants, including 126 plant families, from monocots to dicots, gymnosperms to angiosperms, and to ferns, liverworts, and clubmosses. For a seemingly endless list of affected plants, see Nematodes/Host Species. Worse yet, one plant group may be a suitable host for more than one species of foliar nematode. Although they have a broad range of host plants, foliar nematodes are most commonly found on many herbaceous perennials, as well as on strawberries, rice, and other edible crops. For more about their destructive impact on strawberries and damage potential for other food crops, see Foliar or Bud Nematodes in Florida Strawberries/Univ.Fla.Ext.

Foliar nematode spots on anemone. Photo: Elizabeth Bush, Plant Disease Clinic, Va.Tech., bugwood.org

Foliar nematode damage on hosta. Photo: Jonathan D. Eisenback, Virginia Polytechnic Institute and State University, Bugwood.org

In ornamental gardens and among house plants, the more common host plants are hosta, chrysanthemum, ferns, peonies, begonias (often symptomless), anemones, baptisia, *Hepatica*, *Heuchera*, *Hypericum*, iris, lilies, *Ligularia*, orchids, Oriental

poppy, phlox, *Polygonatum*, *Rogersia,* salvias, verbena, zinnia, African violet, and toad lily. Woody plants seem to be infected less often, although infections have been reported on rhododendron, azalea, privet, *Ficus* and abelia, as well as on wild forest plants. The plant families with the highest number of reported diagnoses are: Asteraceae, Ranunculaceae, Scrophulariaceae, Primulaceae, Lamiaceae, and Liliaceae.

Looking at host plants from a local perspective, it is useful to note that between 2005 and 2020, the **Plant Disease Clinic at Virginia Tech diagnosed foliar nematodes on the following types of plants** (the number in parentheses indicates the number of times diagnosed during those years):

Anemone (1)

Coral bells (3)

Fern (3)

Geranium (1)

Hellebore (1)

Hosta (1)

Lily of the Valley (1)

Peony (1)

Solomon’s Seal (1)

Ginseng (1)

Butterfly Bush (3)

Lily of the valley with foliar nematode spots. Photo: Cathy Caldwell

Symptoms of Foliar Nematodes (Aphelenchoides sp.) on a variegated cultivar (Snow Angel) of coral bells. Photo: Elizabeth Bush, Va. Tech Plant Disease Clinic

Commercial nurseries often have foliar nematode outbreaks, and it is newly-purchased plants that are often the source of foliar nematodes in home gardens. Another source is nearby weeds — yet another reason to eradicate weeds as soon as they appear.

Foliar nematodes are tough little characters. They survive harsh winters, hot summers, and can survive for several years in dead or decaying plant material, including leaves dropped by infected plants in the autumn.

How to Spot Foliar Nematode Damage in your Garden

The typical symptoms of foliar nematodes are spots on the leaves, but it's important to note that a plant can be infected without showing any symptoms, especially in the early stages of infestation. Because most foliar nematodes cannot cross through a major vein, the lesions or **spots made by munching nematodes are usually separated by leaf veins**. Since they can't chew through a leaf vein, the nematodes have to slither out onto the surface to enter into another area of the leaf. If a spot is isolated between veins, you may very well have foliar nematodes. The "**vein-delimited**" nature of the lesions governs their shape, so **the lesions may be either angular leaf spots, long thin streaks, or V-shaped wedges.** Angular and oblong leaf spots — which are the signs I first observed in my garden — merit close attention.

Foliar nematode spots on geranium. Photo: Cathy Caldwell

But remember that not all nematode spots look alike. The lesions on my perennial geraniums looked very different; they were a dark purplish-brown and not particularly oblong. And the lesions on my ferns were different from all the others. The one thing they all had in common, though, was the vein-delimited pattern.

On monocots (which usually have parallel leaf veins) such as lilies, hostas, and iris, the injuries look like stripes or rectangular spots. On dicots (which usually have net leaf venation) such as anemone, ligularia, and peony, the discolored areas look like a patchwork of purple, yellow, or tan areas.

Gardeners should also be aware that the spots can progress from light colors to darker colors and even to holes or slits as the infestation progresses. I noticed this development in my ostrich ferns.

Light-colored lesions on ostrich fern. Photo: Cathy Caldwell

Ostrich fern with dark foliar nematode lesions. Photo: Cathy Caldwell

The following list details the variety of symptoms that might be found, depending upon the plant involved:

Possible Symptoms of Foliar Nematodes: (depending upon the plant)

–Yellow, brown to purple to black wet-looking areas on leaves
–Angular, yellow areas on the leaf bounded by the veins of the leaf
–General yellowing, reddening, or bronzing of leaves, not limited in shape by veins (begonia)
–Death of leaves that remain attached to the plant
–Cupping and distortion of leaves (African violets especially)
–Small, sunken areas on the undersides of leaves
–Stunting of the entire plant
–Chlorosis similar to iron deficiency

—Penn.State Ext.Foliar Nematodes

If you suspect foliar nematodes, you can confirm the diagnosis with a 10X hand lens. Tear off a leaf and submerge it in a small dish with water. Use a clean tweezer, tear the plant tissue into small pieces, and use only a small amount of water. After approximately 24 hours, examine the water with the hand lens and look for tiny roundworms moving about rapidly. Of course, you can also confirm a diagnosis through the Plant Disease Clinic at Virginia Tech by contacting the Help Desk at the Extension Office.

How to Deal with Foliar Nematodes

There's a reason why many authorities recommend destroying any plant infected by foliar nematodes: there is no way to eradicate them, and they can easily spread to other nearby plants. The effective pesticides — fairly effective, that is — are available only to licensed commercial applicators, and if you've got a major infestation, you may want to consider consulting one of these professionals. Even commercial nurseries are limited in the available weapons because some pesticides that were effective are no longer approved for use.

One effective measure is soaking the infected, dormant plant in hot water, but this treatment requires very particular temperatures for particular time periods, yet still risks death or injury to the plant. For these reasons, it's rarely recommended except for so-called "high value" plants. Most of us would say that all of our garden plants are "high value," but I suspect that the experts have another definition. To learn more about the hot water treatment, start with Purdue landscapereport.org.

Interestingly, research suggests that the bio-pesticide **clove oil** can reduce foliar nematode numbers, but there are few EPA-approved pesticides capable of significantly reducing foliar nematode populations, and except for **insecticidal soap,** most are not available to homeowners. To read more about this, check out Rutgers.ed/Research Summary (2018).

The primary advice offered by most experts is to dig up, bag, and remove any affected plant. I had a difficult time mustering the courage to do this. Instead, I emailed one of the researchers whose article I had read — Lisa M. Kohl — and received a reply that gave me an alternative approach. Here is Lisa Kohl's advice:

"As far as control options go for homeowners, foliar nematodes can be tricky because there aren't a lot of pesticides labeled for use. However, ***if a gardener doesn't mind putting a little time in, they can make a big dent in the population and get to a point where the damage is barely noticeable if they spend time removing infected plant material.*** *Gardeners would want to target two areas: the symptomatic (spotted) leaves on the plants and*

the dead/dried leaves on the ground. The foliar nematodes live in green leaves during the summer. The leaves then dry up and fall off the plant. The nematodes also dry up and remain inside those dried leaves to overwinter. In the spring, the nematodes emerge from the dried leaves on the ground and migrate back up plants to infect healthy leaves.

If a gardener makes an effort to ***remove the infected/spotted leaves from the plants and the dried leaves on the ground*** *they should eventually reduce the nematode population. If they remove the infected leaves on a regular basis (maybe at least once a month or so) the nematode population should eventually get to a point where there won't be many leaf spots any more. Since foliar nematodes are mainly an aesthetic problem, the gardener can decide how many leaf spots they're willing to tolerate in their plantings. They may decide they don't want any spotted leaves at all, or they may decide it's okay to have a couple infected leaves here and there."*

Following Lisa Kohl's advice — which was endorsed by Elizabeth Bush of the Plant Disease Clinic at VA Tech — I could soon be found snipping and pulling infected leaves from the geraniums, ferns, stinking hellebores and Solomon's seals in my garden. I maintained a special garbage bag just for these pickings, and I was careful to sanitize tools and my hands afterwards. Within a few weeks, I was already seeing results; the spotted leaves were rapidly replaced with fresh, new, lesion-free leaves. Before I started, almost all my geraniums were spotted. By the end of the summer, almost all of my geranium leaves were free of spots!

Removing leaves infected by foliar nematodes from geraniums.

Would I recommend this approach in all circumstances? No, I would not. In many situations, especially if the infected plants are isolated, it would make sense to remove all infected plants. Gardeners have to assess their situation with the migration potential of foliar nematodes firmly in mind. But since almost all the plants in my front garden were infested, it made sense to try to save them and focus on reducing the populations. By the way, it's possible to propagate nematode-free plants from the roots of infested plants. These roots should then be planted into sterile media.

Here's the sanitation drill for infected leaf picking: After working with infected plants, wash your hands with soap and water and decontaminate anything that has come into contact with the plants (tools, pots, work surfaces, etc.) for 30 seconds with either 70% alcohol (rubbing alcohol) or 10% bleach. Spray

disinfectants that contain approximately 70% alcohol can also be used. It is essential that all plant material you pick off be bagged and destroyed; otherwise you're asking for new infestations elsewhere.

Prevention

Unless and until more effective treatments are developed for homeowners, prevention will continue to be a gardener's best hope. Here's how you can help protect your garden from foliar nematode attacks:

- Monitor newly-acquired plants for two to four weeks before planting them in your garden, and watch for vein-limited spots
- Avoid using overhead sprinklers and spraying; use soaker or drip hoses instead
- Avoid working with plants when they are wet
- Do not take cuttings from nematode-infected plants

If all your preventive measures fail, do not despair. Keep in mind that, at least with ornamental plants, the foliar nematode lesions are mostly an aesthetic problem, and carefully consider the best approach for your situation.

SOURCES:

Featured Photo: Foliar Nematode spots on anemone by Elizabeth Bush, Plant Disease Clinic, VA Tech.

"Foliar Nematodes," Univ. of Florida Dept.Entomology & Nematology/ufl.edu (Feb. 2020) and Univ.Fla.Ext.

"Astronauts of the Nematode World: An Aerial View of Foliar Nematode Biology, Epidemiology, and Host Range," APSnet.org/The American Phytopathological Society (Lisa M. Kohl 2011)

"Foliar Nematodes," Purdue University Landscape Report (May 2020)

"Foliar Nematodes: A Summary of Biology and Control with a Compilation of Host Range," American Phytopathological Society, APS Journals/apsnet.org (Lisa M. Kohl, 2018)

"Foliar Nematodes"/Missouri Botanical Garden/Help for the Home Gardener

Foliar Nematodes,"Univ.of Wisconsin Garden Fact Sheets (2015)

"Foliar Nematodes: Flowers," Univ.Maryland Extension/HGIC

"Take steps to avoid foliar nematodes," MSU Extension, Michigan State Univsity Diagnostic Services (2006)

"'Patchwork Plants' Created by Foliar Nematodes," Univ.Conn. Home & Garden Education Center (2013)

April Edible Garden Tasks

By Ralph Morini | April 2021-Vol.7, No.4

It’s April and edible gardening is in full swing. The air and ground are warming, buds are fattening and if you did some cool weather vegetable planting in March, you may be enjoying the first early harvest of 2021. If you haven’t gotten started yet, fear not. There is plenty of time to get things going and enjoy a productive gardening season.

Bed Preparation

As we’ve mentioned many times, deep tilling is not a recommended practice any longer, except maybe for new beds where integrating organic matter into unimproved soils can make sense.

If you grew a cover crop over the winter, cut it as close to flush with the soil as possible, with a string trimmer or stirrup hoe. Use the cuttings as mulch or add them to the compost heap. If you are not planning to plant for a few weeks, cover the roots with a black plastic tarp or landscape fabric and let the roots rot in the soil. If you want to plant immediately, work the soil just deep enough to loosen the roots, rake them off and compost them. Add a couple of inches of compost to the beds and work it into the top 3-4 inches of soil. Let the soil organisms take it deeper.

A broadfork at work, from the video, "The broadfork – Jean-Martin Fortier – The Market Gardener's Toolkit," available at The Market Gardener/Tools/Broadfork

To loosen compacted soil, drive a digging or broadfork as deeply into the soil as possible and rock it back and forth to loosen without destroying soil structure. Work your way across your rows or beds in 6-12 inch steps.

Rake the surface smooth, and you are ready to plant.

Planting

If starting from seed, follow seed packet directions. For intensive or square foot gardening arrangements, use recommended seed packet spacing in both directions. Goal is to space plants so that mature plants will just touch each other, helping reduce moisture and weed pressure while maximizing production for a given garden space.

Fertilization is important for best results. For guidance on what products to use and how and when to apply them, review the article **A Fertilization Primer** in this month's Garden Shed.

According to Virginia Cooperative Extension's Virginia's Home Garden Vegetable Planting Guide, in Hardiness Zone 7a:

- There is still time to plant cool weather crops, including: beets, broccoli, cabbage, carrots, cauliflower, greens and lettuces, spinach, radishes and turnips. They like it cool, however, so get them in soon.
- Late April is the time to plant bush and pole beans, cucumbers, eggplant, melons, squash and tomatoes. These guys are harmed by frost, however, so check the longer term weather forecast before setting them out or planting. Or be prepared to protect them if a late frost sneaks into the region. I believe global warming is real, but variability seems more obvious than warming in our area, so some caution makes sense.

A Few Tips

- When deciding what to plant where, remember to rotate your crops, preferably on a 3-4 year cycle to minimize pressure from soil borne diseases and pests.
- Maintain a journal for recording crop locations, varieties planted, pest and disease issues, and growing success. You will be thankful when you plant next year.
- Plant seeds at a depth of about 2 times the seed width (not length). Moisten when planting and keep moist until germination.

"Trellises and tripods" by ksuyin is licensed under CC BY 2.0

- Trellises are a great way to save space and keep plants off the ground. VCE publication Vertical Gardening Using Trellises, Stakes and Cages offers guidance for a variety of space-saving plant supports.
- If you started seeds indoors, remember to harden the plants off by progressively exposing them to more sun and wind over 1-2 weeks when outside temperatures are above 50 degrees, prior to transplanting.
- It is best to transplant on a cloudy day or in late afternoon to reduce shock to young plants.
- If transplanting **peat pots**, tear off the top of the pot to a point below the soil line to avoid wicking water away from plant roots.

Straw-mulched chard: Photo: courtesy USDA.

- **Mulching plants after transplanting or germination** is a good thing, but give the soil a chance to warm up before mulching to avoid slowing plant growth.
- When laying out plant locations, remember that leafy greens typically require 6 hours of sun per day while fruiting vegetables want at least 8 hours.
- Consider intercropping. Mixing different plant varieties uses space well, adds diversity to the garden environment, mixes scents that can confuse pests, and attracts a broader array of beneficial predators, helping reduce pest damage.
- If you would like to extend the harvest season for your greens, **consider chard**. Chards have a lower tendency to bolt and can withstand summer heat longer than most other greens. In addition, rainbow chard makes a pretty presentation in the garden.
- Should a surprise **late frost** threaten your warm weather crops, a row cover can save the day. Review the Garden Shed article: Row Covers: A Garden Season Extender with Benefits for materials and techniques for their use.

New strawberry bed: Photo Ralph Morini

- It isn't too late to plant asparagus or strawberry patches. For guidance on starting asparagus refer to the Spear into Spring with Asparagus in the March 2015 issue of *The Garden Shed,* and the VCE publication Asparagus, which specifies recommended cultivars for Virginia. For strawberries and other small fruits check out the VCE publication Small Fruit in the Home Garden.
- If you are planning a home orchard, check out the VCE publication Tree Fruit in the Home Garden for help in site selection, tree selection and care for many popular fruits.
- If you are curious about the particular weeds you are finding in the garden or its surroundings, either for elimination or edibility, VCE's Weed Identification guide is a good reference resource.

I hope you find this information helpful. Comments on content are welcome. In any case, enjoy your garden and please come back for another visit next month.

SOURCES:

Virginia's Home Garden Vegetable Planting Guide: Recommended Planting Dates and Amounts to Plant, Va.Coop.Ext.Pub. 426-331

Cover photo: Compost: Photo: Ralph Morini

Weed identification: https://weedid.cals.vt.edu/

Using Culinary Herbs

By mking | April 2021-Vol.7, No.4

What follows is a companion to Pat Chadwick's article on how to grow, harvest, and preserve culinary herbs in last month's issue of *The Garden Shed*. That article provided the nuts and bolts of herb cultivation. This article offers additional background, benefits, and practical suggestions for cooking with herbs, plus a few yummy recipes for you to experiment with in your own kitchen.

Flavorful salad with fresh herbs. Photo courtesy of Pixabay.

What are culinary herbs?

The word "herb" comes from the Latin root "herba," which means green crop. That makes perfect sense, as the term "herb" refers to the green leafy parts of plants, including stems, leaves, and blossoms, that grow in temperate climates. Herbs are different from "spices," which come from the roots, dried bark, buds, seeds, fruits, or berries of plants and trees that grow in tropical climates. The focus here is on culinary herbs, those used for flavor in cooking.

In the words of Jeff Cox, author of *The Cook's Herb Garden*, "I always think of culinary herbs as the champions of the kitchen garden." Marie-Pierre Moine, co-author of that same book, echoes this sentiment by saying, "As a cook, herbs are my best friends." Indeed, any meal would be rather bland without these aromatic wonders and taste bud heroes that

turn simple, everyday foods into tantalizing gustatory adventures.

Why cook with herbs?

Handful of refreshing herbs. Photo courtesy of Pixabay.

You might be pleasantly surprised at the remarkable benefits of culinary herbs. Of course, they contribute distinctive flavors to meals, but herbs can also stimulate other senses, from delightful aromas to colorful visual appeal and unusual textures. For those concerned about weight gain, herbs are a dream come true; they help create memorable dietary fare without piling on calories. In addition, herbs are excellent replacement ingredients for cooks who aim for healthier dishes by decreasing the amount of salt, sugar, and fats in standard recipes.

An extra benefit of cooking with herbs is that flavorful dishes can be more satisfying. As a result, tasty dishes tend to slow down the rate of food consumption. As people take their time to savor delicious meals packed with culinary herbs, overall intake is often reduced. To top it off, many herbs are full of phytochemicals, known for their disease-fighting properties, and antioxidants, substances that delay or prevent some types of cell damage. Three cheers for culinary herbs that support improved health, which is a priority for all of us these days.

Historical and Cultural Context

Fresh culinary herbs. Photo courtesy of Pixabay.

Wild and cultivated herbs have been an integral part of food preservation and preparation for centuries, including prior to recorded history. For example, 3000 years ago in ancient Egypt, special schools were established to promote knowledge of herbs for culinary, medicinal, and cosmetic use. Herbs are mentioned throughout the Bible, and in the Middle Ages, herb gardens appeared throughout Europe. Looking back at their practical value, herbs played a critical role in preserving foodstuff long before the dawn of refrigeration. For instance, salting or pickling can prolong the shelf life of meats, fish, and vegetables.

Unique cooking styles and flavors are often associated with particular cultures, and certain herbs are a prominent feature of traditional cuisines the world over. Think about Italian food and basil, garlic, sage, and rosemary come to

mind. Consider French recipes and that conjures up images of tarragon, thyme, and bay leaves. Imagine meals in the Middle East and notice the taste of parsley, mint, and lemon on the tip of your tongue. In a sense, culinary herbs are power players in cultural legacy. Over many generations, herbs deliver the noticeable bouquet and flavor attached to favorite recipes that represent renowned cooking traditions. After all, many of us cling to special dishes that reflect our own cultural heritage. Herbs also remind us of beloved relatives who may have had a flair for baking or cooking. For example, anytime I make a big pot of tomato sauce, my dad's spunky Italian "Ma" seems to be standing right beside me.

Fresh tomato sauce with pasta. Photo courtesy of Pixabay.

Flavor Scale, from Mild to Pungent

When considering which herbs to use, keep your own taste preferences in mind, as well as the palette of those you are preparing food for. You might love spicy dishes, but your spouse or children might reject meals with flavors that are too intense, hot, or peppery. Look at various options and ponder where common herbs fall on a scale of mild to spicy. Jill Norman's book, *Herbs and Spices: The Cook's Reference*, groups culinary herbs into flavor categories such as mild, sweet, tart, and pungent. This helps with meal planning and when choosing new recipes for kitchen experimentation. The following list groups well-known herbs of familiar cuisines, identifies their flavor, and suggests culinary possibilities.

Mild

Parsley – Fresh, tangy taste; leaves and stems can be chopped and used to bring out the flavor of other seasonings. Chopped parsley should be added at the end of cooking for freshest flavor and greatest nutritional benefit. It's quite versatile and widely used in sauces, salads, and stuffing recipes. Parsley pairs well with fish, eggs, rice, and just about every vegetable. From my point of view, this herb is a "must have" for anyone who loves to cook!

Parsley, packed with vitamins. Photo courtesy of Pixabay.

Purslane – Fresh, lemony taste; leaves and flowers can be added into salads. Purslane is a fine accompaniment for meats and other dishes from the Mediterranean, such as lamb and veal stew, yogurt garlic dressing, and Lebanese fattoush.

Sweet

Sweet basil – Aromatic with warm, peppery flavor; use fresh leaves (if available). Basil is an excellent companion for tomatoes, poultry, and seafood, and it's the main ingredient of pesto. There are many basil varieties, each with its own distinctive taste and aroma.

Lavender – Lovely floral aroma and strong, savory taste, but should be used sparingly; use dried flowers and leaves. Fresh, chopped flowers can be added to cake batter, sweet pastry dough, cooked rice, and meat marinades. Infused flowers are a delightful addition to sorbets and ice cream.

Lavender. Photo: courtesy of Pixabay.

Tart

Bee balm – Delicate citrus taste; use fresh or dried leaves and flowers. Shredded leaves can be added to yogurt or cream sauces. Chopped flowers from bee balm are tasty with cream cheese. It's also a delightful flavoring for tea and homemade lemonade.

Flower on bee balm plant, courtesy of Pixabay

Lemon balm – Lemon mint flavor; use fresh or dried leaves. This herb is a great complement for fish and poultry, and fresh leaves are tasty when scattered throughout steamed or sautéed vegetables.

Licorice or Anise

Dill – Slightly sharp taste and remarkable fragrance; use fresh or dried leaves and seeds. Dill makes a terrific complement for fish and seafood and is an essential flavor of many Scandinavian dishes. This unique flavor pairs well with root vegetables and sour cream sauces. Of course, dill is the well-known ingredient of

crunchy dill pickles.

Feathery dill sprigs. Photo courtesy of Pixabay.

Tarragon – Definite anise flavor with sweet aftertaste; use fresh or dried leaves and sprigs. Tarragon is a standard flavoring for French dishes, especially for sauces made with *fines herbes,* adding pleasant aroma and taste to summer vegetables, most notably, fresh tomatoes. *Fines herbes* is a combination of chopped herbs that usually includes parsley, chervil, chives, marjoram, and tarragon. For best flavor, fresh herbs should be used.

Tarragon. Photo courtesy of Pixabay.

Mint

Peppermint – Noticeably tangy, menthol smell with a rather cool aftertaste. This mint is quite strong, and it's mainly used to flavor teas, sweet desserts (sparingly), and toothpaste.

Aromatic peppermint for herbal tea. Photo courtesy of Pixabay.

Spearmint – Refreshing taste with delightful aroma; use fresh or dried leaves. Mint adds wonderful flavor to carrots, peas, and zucchini, and it pairs well with marinades and sauces for lamb, veal, chicken, or pork. Mint can embellish fruit salads and fruit punch, as well as the famous mint julep drink.

Bitter

Chicory – Crispy, bitter taste; use fresh, young leaves and flowers. Chicory can wake up the natural flavors of cheese and salad greens, and it has been used as a less expensive substitute for coffee, without the caffeine content.

Hyssop (*Hyssopus officinalis,* not to be confused with anise hyssop, *Agastache foeniculum*, an ornamental) – Potent, slightly mint flavor with camphor-like aroma; use the flowers and young leaves, but add a small amount, as this flavor can be overpowering. Hyssop is frequently added as a flavoring for non-alcoholic drinks and in fruit desserts containing apricots, peaches, cherries, and raspberries. The ancient Romans used hyssop to make herbal wine, and hyssop leaves make a delightful, soothing tea.

Chicory growing in field. Photo courtesy of Pixabay.

Pungent

Cilantro – Distinct lemony flavor with a hint of pepper and pungent, ginger-like aroma; use leaves and sprigs, and be sure to add them toward the end of cooking. Cilantro is a staple, go-to herb throughout most of Asia, used generously in soups and curry sauces or stir-fried dishes. This herb is often combined with chili peppers to make relishes and salsas in Mexico and India.

Oregano. Photo courtesy of Pixabay

Oregano – Robust, lemony taste; use dried leaves, as they have a stronger flavor than fresh ones. Oregano is a well-known staple of Italian dishes, but it is also a key ingredient of Greek souvlaki and salads. Tex-Mex chili con carne is flavored with a combination of oregano, paprika, cumin, and chili powder.

Rosemary – Peppery, woody taste with a strong, refreshing aroma that lingers; leaves must be chopped up before use in cooking, as they are rather tough. In Mediterranean cuisine, rosemary is often used with olive oil to flavor vegetables and kebabs. It's a great addition to focaccia, crackers, and other breads and a wonderful complement to chicken dishes.

Rosemary sprig. Photo courtesy of Pixabay.

Fresh thyme. Photo courtesy of Pixabay.

Thyme – Spicy, earthy taste with hints of mint; use fresh or dried leaves and sprigs. Thyme is an excellent choice for recipes that call for slow-cooking, and it's ideal for soups and stews that contain onions, beer, or red wine. It's a fundamental flavoring for Creole and Cajun cooking, including Louisiana's well-known gumbos and jambalayas, and also in New England clam chowder.

Great Partners

When considering which herbs to use, make note of recommended culinary partners. These combinations tend to bring out memorable flavors while capturing a tantalizing balance of gustatory delight. Remember that a mild herb can be paired with a stronger herb to enhance its appeal on your taste buds. For example, rosemary, parsley, and garlic work well together in lemony sauces for chicken, pork, or lamb. Dill, parsley, and thyme are delicious with fish and seafood dishes. Rosemary, oregano, and garlic bring out wonderful flavors with roasted meats, such as lamb or pork. Parsley, tarragon, dill, and mint create delectable yogurt sauces, while lavender, cilantro, and basil capture the delicious freshness of fruits like peaches, apricots, plums, and pears.

Preparing Herbs for Consumption

The secret to best flavor with herbs is proper preparation. Always begin with fresh herbs that are clean and dry and have your culinary tools ready. In most cases, you will want to strip or pluck leaves from the stems of fresh herbs. After that, place the leaves on a clean chopping board and slice them with a large, sharp, chef-style knife. For broader leaves, pile them up before slicing for more efficient prep time. To finely chop herbs, rock your knife back and forth to get smaller pieces.

Favorite herbs for French cooking. Photo courtesy of Pixabay.

If you plan to harvest and dry or freeze your own home-grown herbs for use in cooking, be sure to read Pat Chadwick's article in the March issue of *The Garden Shed* for suggestions and tips. Just remember that flavors will be best when herbs have been dried quickly without exposure to sunlight or high heat. Keep a record of drying or freezing dates, because most fresh herbs that have been preserved will start to lose their noticeably piquant flavor after about six months.

Tips

In general, you will achieve more vibrant, distinct flavors in prepared dishes if herbs are added toward the end of the cooking process. However, if you're looking for more blended results, such as in sauces, it's wise to add herbs at the beginning of cooking. When preparing uncooked recipes, such as salad dressings, add herbs just a few hours before serving time, to allow flavors to be well-combined.

Fresh herbs can be stored in a damp towel or plastic bag in the refrigerator for a couple weeks. Over time, most dried herbs lose their potent taste, so consider discarding containers that have been on your shelf for a year or more. When following a recipe that calls for herbs, the amount specified usually refers to dried herbs. If you plan to use fresh herbs, you should increase the amount (e.g., one tsp. of dried herbs = 1 Tbsp. of chopped fresh herbs). To brighten up the taste and visual appeal of dishes you serve, try sprinkling some herbs on the plates in advance. Your family and guests are sure to notice the flavor enhancement.

Recipes

Now, go ahead and be bold! Try a few recipes that feature some of the herbs mentioned in this article. Your taste buds and tummies will thank you.

Garlic and Herb Seasoning Blend (from ***Homegrown Herbs*** by Tammi Hartung, 2011)

Great all-around seasoning for bread, pasta, and vegetables.

2 Tbsp dried basil

2 Tbsp dried marjoram

2 Tbsp dried oregano

2 Tbsp dried parsley

2 Tbsp dried rosemary

2 Tbsp dried thyme

2 Tbsp dried onion flakes

1 Tbsp sea salt

2 tspn garlic powder

1 tspn freshly ground pepper

Combine all ingredients and store in an airtight container until ready to use.

Yogurt Sauce with Parsley and Mint (from ***The Cook's Herb Garden*** by Jeff Cox and Marie-Pierre Moine, 2010)

Use this sauce to cool down complementary spicy dishes.

5 oz plain, whole milk yogurt

1 garlic clove, peeled and crushed

1 tsp lemon juice

1 Tbsp chopped parsley

¼ oz smashed feta cheese

1 tspn chopped marjoram

1 tspn dried mint

1 ½ Tbsp olive oil

Sea salt and freshly ground pepper

In a food processor, blend the yogurt, parsley, lemon juice, feta cheese, marjoram, and dried mint. Season with salt and pepper. Put in a covered bowl in the refrigerator for at least two hours. Just before serving, drizzle the olive oil into the mixture and stir in gently. Scatter some fresh parsley and mint on top.

Asian Marinade (from *Herbs and Spices.* by Jill Norman, 2002)

Recommended for use with poultry, fish, or spareribs.

2 shallots, chopped

1 small piece of fresh ginger, chopped

1 hot chili pepper, sliced

2 tsp sugar

¼ cup cilantro, chopped

2 Tbsp fish sauce

5 Tbsp rice vinegar

Blend ingredients well and keep in refrigerator until ready to use.

Hopefully, this article has piqued your interest in cooking with herbs. Be sure to explore the references listed below for more information and tantalizing recipes for future culinary adventures.

Books

Herbs and Spices (Norman, 2002)

Homegrown Herbs (Hartung, 2011)

The Cook's Herb Garden (Cox and Moine. 2010)

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Appling, Shawn. Herb Culture and Use. Virginia Cooperative Extension, **Publication 426-420.**

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Virginia Virtual Farm to Table: Herbs (video with instructions for making pesto). Virginia Cooperative Extension.

Anise Hyssop for the Perennial Garden, Penn.State Extension, 2019.

April Tasks in the Ornamental Garden

By Cathy Caldwell | April 2021-Vol.7, No.4

GENERAL APRIL CHORES IN THE ORNAMENTAL GARDEN

Top-dress established ornamental beds with an inch of **compost** and work it lightly into the soil. Do this every year and you'll replenish the nutrients needed by your plants, plus improve your soil's structure and water-holding capacity. This is probably the most important thing you can do to help your plants thrive and flower abundantly.

Clean up flower beds and borders, if you haven't already done so. Cut back dead stems and foliage from perennials that were left standing over the winter. Check your shrubs for dried leaves that may have accumulated inside and under them; remove those leaves before the plant starts making its new leaves.

Photo: Cathy Caldwell

Re-edge flower beds and borders with a sharp-edged spade or half-moon edger, removing any grass or weeds that have migrated into them. Clarifying the boundary between lawn and flower bed is one of the best ways to give your ornamental garden a neat look.

Tackle weeds

Your beds may have winter annual weeds — broadleaf weeds like hairy bittercress, chickweed, deadnettle, and henbit — which reproduce by seed that germinates in fall, grows during the winter, and then produces flowers and seed in the spring. If you didn't get them in March, be sure to root them out now, before they set seed. Then add a layer of mulch, which will suppress germination and growth of these weeds next year.

For photos and helpful identification tips for these and other weeds, check out the Virginia Tech Weed ID site. The University of Illinois Extension's on-line publication on Weed Identification contains a number of useful close-up photos of weeds. While poking around in the Virginia Tech Weed ID site, I discovered that there are several kinds of chickweed.

Big chickweed (Ceerastium fontanum ssp. vulgare) Photo: VA Tech Weed ID., https://weedid.cals.vt.edu/profile/234

Jagged chickweed. Photo: Va. Tech Weed ID

Assess perennials that may need dividing, and for advice on making this decision, see last month's article, Guidelines for Dividing Perennials. Some perennials can be divided in either spring or fall, but the general rule is to divide fall-blooming perennials in early to mid-spring. On the subject of when to divide, you can check this list before you proceed: When and How to Divide Some Common Perennials/Va.Coop.Ext..

Stay attuned to the weather and protect any ornamental plants that might be vulnerable to a sudden dip in overnight temperatures. You don't want a freeze to kill the buds on your favorite flowering shrub. A row cover, old sheet, cardboard, or thick layer of newspapers will generally do the job. Our expected **last frost date** is now April 15–25 for Zone 7a, but "Expect the unexpected" is the watchword nowadays, thanks to climate change. Keeping up with the weather forecast is more important than ever.

TASKS RELATED TO PARTICULAR PLANTS

Trim back tattered or freeze-damaged *Helleborus* foliage in early spring. The current season's flowers emerge from the center of the plant and are more appealing without the distraction of the old foliage. *Epimedium*, h*euchera*, h*eucherella*, t*iarella*, l*iriope*, b*ergenia* and some ferns are other perennials with evergreen or semi-evergreen foliage that may need to be cut back or neatened up in early spring. Be careful not to snip new, emerging basal foliage or flower stalks by accident.

Divide fall-blooming perennials in early to mid-spring. Wait until later in the summer (July) to divide irises and Oriental poppies, and until autumn to divide daylilies and peonies. If you're new to dividing plants, be sure to consult the recent Garden Shed article, Guidelines for Dividing Perennials.

Prune hybrid roses when bud growth starts in early spring. Before making the first cut, look at the overall architecture of the plant. Specifically look for and remove dead wood, the smaller or weaker of two crossing branches, thin (smaller than the diameter of a pencil) branches, interior facing branches, and inward facing buds. When making cuts, prune back to just above an outward-facing bud. As you make your cuts, look for any branches that have a hole in them, signaling cane borer damage. The interior wood surrounding the hole will usually be brown or tan. Cut the branch back until you reach white wood. As you prune, clean up any leaves or other debris from around the base of the shrub.

Install stakes or ring-type supports for peonies and train the foliage inside the ring. Peonies have a tendency to grow several inches practically overnight. It's much easier to deal with the foliage when it's only a few inches tall.

Daffodils:

- **Let the foliage die naturally.** Green leaves produce food for plant growth next year. After leaves turn yellow, cut and remove the stems and foliage of the plants. Don't braid or tie up the foliage since this could interfere with photosynthesis and reduce flowering next year.
- **If you have overcrowded clumps of daffodils**, they should NOT be divided until after the foliage has died back later in the summer, usually 6 – 8 weeks after they finish blooming. Bulbs dug and moved before foliage fades may not bloom for several years. Mark the location of the clump with a golf tee, plastic knife, or a tent stake.

Pruning Chores: Several early spring-blooming shrubs are ready for pruning in April, **after bloom is**

done: forsythia (*Forsythia x intermedia)*, winter jasmine (*Jasminum nudiflorum*), flowering quince (*Chaenomeles japonica*), pussy willow (*Salix discolor*), and witchhazel (*Hamamelis vernalis*). Fall-blooming witchhazel (*Hamamelis virginiana*) is also pruned in early spring. On these shrubs, flowers are produced on wood from **past season**, and begin setting buds for flowering next year **soon after blooming. Before you start cutting, be sure to read A Pruning Primer: Tools, Techniques, and Timing** in the February 2020 issue of *The Garden Shed*.

April is the ideal time to prune boxwood and cherry laurel. For a listing of other shrubs that can be pruned in spring, take a look at the helpful **Shrub Pruning Calendar** published by the Virginia Cooperative Extension, Va.Coop.Ext. Pub.No. 430-462.

EARLY SPRING PLANTING TIPS

Early in the month, plant cool-season annuals that can tolerate a light frost. Pansies, of course, are the quintessential cool-season annual, but there are lots of other choices for early spring. For example, calendulas, larkspur, love-in-a-mist, sweet alyssum and sweet peas all may be direct sown in the garden now. Some cool-season annuals that are best started indoors for transplanting after the last frost date include: forget-me-nots, lobelia, painted tongue, and snapdragons. Don't forget to harden off the seedlings before planting them outside. For detailed instructions on this, check out a recent *Garden Shed* article, How to Start Your Garden Seeds.

As a general rule, **late-summer or fall-flowering perennials are planted in spring**, but check guidelines specific to each plant.

MONITOR FOR PESTS AND DISEASES

Be sure to monitor all that newly-emerging foliage for diseases and pests. The sooner you catch a problem, the less likely it is that major damage will occur. Also, take photos and start researching possible causes. Early efforts lessen the likelihood that drastic (as in chemical) treatments will become necessary. For a photo-based guide to identifying **diseases of shrubs,** see Shrub Diseases, Univ.Md.Ext..

Keep an eye out for the tiny boxwood leafminer fly, which has usually been seen buzzing around boxwoods in April as it prepares to deposit eggs in the leaves. It's the larval stage that causes damage as it feeds between the upper and lower layers of leaves. If you see blisters on boxwood leaves, prune off the blistered foliage before the adult flies emerge. Dispose of the foliage in the garbage. Alternatively, you can break open a blistered leaf with a finger nail and remove the larvae. For more about the boxwood leafminer and other insect pests of boxwoods, look at Va.Coop.Ext.Insect & Mite Pests of Boxwood.

It has apparently not reached our area yet, but keep an eye out for **spotted langernfly**, which is a relatively new pest with the potential to do serious damage to a number of crops as well as home gardens. The Virginia Department of Agriculture and Consumer Services (VDACS) is endeavoring to prevent spread beyond Winchester and Frederick County, where it was originally identified in 2018. The VDACS just recently announced that this pest has become established in Clarke and Warren counties. One sign of possible infestation on a tree is sugary secretions called honeydew, which may then be infected with black sooty mold. For photos of each life stage of this insect and more information, including how to report a sighting, see Spotted Lanternfly in Virginia/ Va.Coop.Ext., Spotted Lanternfly Life Cycle in Virginia/Va.Coop.Ext. and Pest Alert: Spotted Lanternfly Va.Coop.Ext..

Eastern tent caterpillars (*Malacosoma americana)* overwinter as eggs, and the young larvae hatch around the time of bud break in March or April. The young larvae gather near the fork of the tree limb to begin spinning their web or tent. They emerge from the web to munch on leaves, but return to the "tent" at night. Eastern tent caterpillars are primarily found on native black cherry, crabapple, and apple trees.

Eastern tent caterpillars and egg masses. Photo: John A. Weidhass, Virginia Polytechnic Institute and State University, Bugwood.org

Manual methods for removal of the tents are usually sufficient, but burning is not recommended. If you're seeing a lot of tent caterpillars, remember that their egg masses, which are shiny and found on small twigs, can be removed in fall and winter. Natural controls include predaceous and parasitic insects (especially wasps), and disease organisms. They are a favorite food of the yellow-billed and the black-billed cuckoo. Trees usually recover from lost foliage unless the tree is young or weakened and stressed from other problems. If it appears that an insecticide is necessary, *Bacillus thuringiensis* (Bt, Dipel or Thuricide) is a safe biological spray. Trees usually recover from lost foliage unless the tree is young or weakened and stressed from other problems. Don't be alarmed if you see mature caterpillars crawling on plants, walkways, buildings and the like. Mature migrating larvae are no longer feeding, but are seeking a place to pupate. Crushing them will probably decrease the population to some extent.

Don't Forget the Deer Repellent

Deer tend to browse on broad-leaf evergreens as well as twigs and buds during the winter and early spring, so keep spraying your vulnerable plants with deer repellent. Keep monitoring for deer damage and change repellents regularly. And once that spring growth appears, start spraying it immediately. Your other option is to set up protective barriers, like netting. If you have comments or questions about either method, please write them in the comments section below. We'd love to hear from you.

Don't Forget to Check out the Monthly Gardening Tips, now located under **Gardening Resources** on the main page of the PMG website:
https://pmgarchives.com/gardening-questions/monthly-gardening-tips/#April

For more on April Tasks and Tips, consult previous issues of *The Garden Shed*:

April, 2019

April, 2018

April, 2017

SOURCES:

Eastern Tent Caterpillar, Virginia Cooperative Extension (VCE), https://www.pubs.ext.vt.edu/444/444-274/444-274.html

Perennials: Culture, Maintenance and Propagation, VCE, https://www.pubs.ext.vt.edu/426/426-203/426-203.html

“Eastern Tent Caterpillar,” Entomology at the University of Kentucky, https://entomology.ca.uky.edu/ef423

Pest Management Guide, 2021 Va. Coop.Ext.

Press Release 2/9/21/Va.Dept. of Agriculture & Consumer Services

Spotted Lanternfly Life Cycle in Virginia/Va.Coop.Ext.

Master Gardener Favorites

By Liz Sutphen | April 2021-Vol.7, No.4

In this section, we highlight the all-time favorite plants of our Piedmont Master Gardener group members, why they love these plants, and special tips for growing. Our goal is to give the *Garden Shed* reader a view into the gardens (both indoor and outdoor) of our fellow Master Gardeners, and perhaps the inspiration and knowledge to grow the same plant.

RALPH MORINI, Current President of Piedmont Master Gardeners

Favorite Plant: Curly Kale

Why Your Favorite*:* Essentially very versatile and tasty. “Saute with garlic, oil and a little balsamic vinegar or slice into strips for a great slaw. Especially good in a salad with lemon/orange citrus dressing, toasted pecans and dried cranberries. Let the salad marinate in the dressing for an hour or two to tenderize the kale and brighten the color.”

Growing Tips*:* “Plant directly outdoors in mid-March and again in August. Work a couple of inches of compost into the soil at both plantings and add a balanced organic fertilizer per label directions. Cabbage worms are the major pest. Use a row cover from mid-May to frost to minimize damage.”

Curly kale in Ralph's garden. Photo: Ralph Morini.

FERN CAMPBELL chairs PMG's Project Committee and was awarded 2018's Master Gardener of the Year

***Favorite Plant**:* 'Fluffy Duffy' fern (yes, a fern!), a cultivar of *Nephrolepsis exaltata*

***Why Your Favorite**:* "It has full, thick, but fine-textured fluffy foliage that has extensive overlapping, a dense appearance in regular pots but also when in hanging pots. The fronds can reach about 3 ft. It is a houseplant that was given to me by my mother when we were first married in the mid-1970s and I keep dividing, and propagating giveaways."

***Growing Tips**:* "It can tolerate relatively low light, but also a lot of light. It does well in a variety of pots and looks beautiful as a hanging plant as well as being so attractive in a regular pot sitting on a stand or table. Fertilize with fish emulsion, once monthly, April to November. It likes being watered regularly and likes some humidity."

Fern's fern. Photo courtesy of Fern Campbell.

Upcoming Events

By Susan Martin | April 2021-Vol.7, No.4

PIEDMONT MASTER GARDENERS GREEN ELEPHANT SALE
402 ALBEMARLE SQUARE, CHARLOTTESVILLE
SATURDAY, APRIL 17
10:00 AM – 1:00 PM

The Piedmont Master Gardeners spring Green Elephant Sale is around the corner and YOU'RE INVITED! You will find a staggering variety of items to create and maintain your garden: decorative pots, books, hand tools, long-handled tools, decor, lawn mowers, plant supports, bird houses and feeders, soaker hoses, sprinklers, leaf shredder, a vermiculture bin, and much more. These donated items have been lovingly used and now are greatly reduced in price. Masks are required; COVID spacing protocols are in place so that you can browse and enjoy in-person shopping!

Green Elephant Sale Photo: Ruth Iwano

ADD TO THE FUN! DONATE ITEMS YOU NO LONGER NEED. If you have **GARDEN-RELATED** items you'd like to donate, the Green Elephant team is happy to accept them. Look for the yellow Piedmont Master Gardeners banner in the window of 402 Albemarle Square; the Green Elephant volunteers will help unload your vehicle.

Donations accepted on Tuesdays and Saturdays, 10 AM – Noon
Extra day for last-minute donors on Friday, April 16th, 10 AM – Noon

QUESTIONS can be sent to:
greenelephant@pmgarchives.com

PIEDMONT MASTER GARDENERS
VIRTUAL VIA ZOOM AND FREE
Garden Basics Workshop: "Herb Gardening – History & Design"
Saturday, April 17
2:00 – 3:30 PM

Learn about the history of herb gardens and how to design your own. Fill out our registration form by 5:00 PM April 12 to attend this Garden Basics workshop. An invitation for this Zoom presentation will be sent to your email address on the morning of April 17.

May Virtual Garden Basics Workshop:

"Tomatoes & Tomato Diseases"
Saturday, May 15
2:00 pm – 3:30 PM

Although these workshops are free, registration is required. See this **LINK** for more information and to register.

VIRGINIA NATIVE PLANT SOCIETY
STATE AND CHAPTER EVENTS

See this LINK for a listing of virtual April events and in-person walks hosted by different state and chapters of the VNPS.

BLUE RIDGE PRISM (PARTNERSHIP FOR INVASIVE REGIONAL SPECIES MANAGEMENT)
FREE VIRTUAL QUARTERLY EVENT
Wednesday, April 21
1:00 – 4:00 PM EDT

Virtual Research Updates:

Drones to Map Invasives
Biocontrols
PRISM Updates including Noxious Weeds Submissions

REGISTER for this FREE event.

GROW NATIVE SERIES – VIRTUAL
THE PLANT VIRGINIA NATIVES PARTNERSHIP*
ALSO SPONSORED AND HOSTED BY LEWIS GINTER BOTANICAL GARDEN AND BLUE RIDGE PRISM
SIX LECTURES, FRIDAY, MARCH 5 – TUESDAY, MAY 4
6:30 – 8:00 PM

Although this series has started, registrations are still being accepted. Learn about why and how to use native Virginia plants to your landscape in this series offered by the Plant Virginia Natives partnership. **$10 covers the entire series.** Attend each program or pick and choose your topics. These lectures will be on Tuesday evenings. See this **LINK** for more information and to register. Look for information on another series to be offered this fall to help you continue your efforts and prepare for the winter.

*The Plant Virginia Natives Landscaping with Natives webinar series is coordinated and funded, in part, by the Virginia Coastal Zone Management Program through grants from the NOAA Office for Coastal Management to the Virginia Department of Environmental Quality.

“FORGOTTEN USES OF AMERICAN FLORA”
ZOOM PRESENTATION WITH JUSTIN FORNAL
Presented by Lewis Ginter botanical Garden, Missouri Botanical Garden, and Phipps Conservatory and Botanical Gardens
Tuesday, April 27, 7:00-8:30 pm

Gear up for a botanical journey through North America as we explore the illustrious history of overlooked plants. Justin Fornal will identify commonly-seen roadside weeds that were once used in Native American Ceremonial rituals. He will discuss the processes used to create birch sap wine, mojo bags, resin-based adhesives, medicinal salves, colonial-era tinctures, and various plant-based textile dyes. See this LINK to register.

LEWIS GINTER BOTANICAL GARDEN
VIRTUAL GARDEN TOUR
"Springtime in the Garden"
Thursday, April 8
1:30 – 2:15 PM

In early March, spring creeps in. By April, daffodils, tulips and bluebells color the ground while viburnum and redbuds paint the canopy above. The blazing colors of rhododendrons and azaleas fill the space between. With the warming May weather, peonies, iris and roses emerge. Learn what makes "A Million Blooms" possible in our formally designed Central Garden beds and in our naturalized areas filled with perennials.

This is an online virtual tour via Zoom. See this LINK to register.

NOTE: Lewis Ginter Botanical Garden is open for visitors Wednesday through Sunday but tickets must be purchased online in advance. See this **LINK** for more information on visiting.

MT. CUBA CENTER VIRTUAL LECTURE SERIES

Twilight Garden Series: "Getting Started With Native Plants"
Instructor: Nancy Bell
6:00 – 7:30 PM

Register for one class, or for all three in the series:

May 12: Trees
May 19: Shrubs
May 26: Perennials

"Nature's Best Hope"
Instructor: Doug Tallamy
Thursday, May 13
6:00 – 7:30 PM

See this LINK for more information on these lectures and others, and to register.

Mt. Cuba Center is a non-profit botanical garden located in Hockessin, Delaware near Wilmington. Its woodland gardens produce some of the most spectacular displays of wildflowers in the mid-Atlantic region. The botanical garden will reopen to the public on **April 1. See this LINK for information on Mt. Cuba's world-famous trial garden and study results.**

ECOLOGICAL LANDSCAPE ALLIANCE ("ELA")
WEDNESDAY WALKS IN THE GARDEN
FREE WEBINAR SERIES
12:00 – 1:00 PM EDT

ELA is pleased to announce a second season of **FREE** online garden presentations covering a wide range of gardening topics to offer plant tips, gardening guidance, humor, and inspiration. REGISTRATION IS REQUIRED.

See the highlighted session title links for more information and to register.

Proper Landscaping Planting: Are We Landscaping in a Deficit Model?

Wednesday, April 7
Maximizing Space in the Garden: Creating More of a Good Thing
Wednesday, April 14
Creating Community with Our Insect Neighbors
Wednesday, April 21
Going Underground: Unearthing the Role of Soil Organisms in Plant Health
Wednesday, April 28
Beauty and Biodiversity at Cornell's Mundy Wildflower Garden
Wednesday, May 5
The Journey of Edible Landscapes
Wednesday, May 12
Native Plants for Bird Friendly Communities
Wednesday, June 9
Fundamentals of Garden Layers
Wednesday, June 16

CHARLOTTESVILLE AREA TREE STEWARDS
FREE Classes via ZOOM Announced for first half of 2021

"Tree Identification by Season: Spring"
Tuesday evening, April 13
7:00 – 8:30 PM
Register here

These virtual classes are free**,** but if you would like to attend, we ask that you register. After you register, you will receive an email with a Zoom link a few days before the class.

ADDITIONAL CLASSES

"**Identify and Control Non-Native Invasive Plants**," Sunday, May 23, 2:00-4:00 PM
"Identify Trees in Summer," Tuesday, June 15, 7:00-8:30 PM

See this **LINK** for information on when class registration begins.

WILD VIRGINIA FREE VIRTUAL EVENT
"MONARCH BUTTERFLIES: BIOLOGY, ECOLOGY & CONSERVATION"
Monday, April 19
7:00 PM EDT

Wild Virginia is hosting an event with acclaimed scientist and current director of the Virginia Master Naturalist program, Michelle Prysby, who will describe the amazing biology and ecology of monarchs. We will then we will talk about at least five projects (the Monarch Larva Monitoring Project, Journey North, Monarch Watch, Project Monarch Health, and the Integrated Monarch Monitoring Program), what each project requires, and how you can be involved with one or all of them! Want to sign up? Click this LINK to register!

MONARCH JOINT VENTURE
The 2021 Monarch Conservation Webinar Series
4th Tuesday of the Month *
2:00 PM EST

April 27th – Western Butterflies: An Overview of Threats and Population Trajectories

The Monarch Joint Venture is partnering with the U.S. Fish and Wildlife Service National Conservation Training Center to put on another year full of informative and inspiring webinars on all things monarch. Webinars will be held live on the 4th Tuesday of the month at 2 PM ET. Each webinar will be recorded and for later viewing as well. Check on the session title to register.

Future Webinar Titles:

- **May 25th** – Monarch Butterfly Reproduction: From Physiology to Behavior
- **June 22nd** – Reinstalling Native Habitat on Private Property in the West
- **July 27th** – Aligning Mosquito Control with Pollinator Protection
- **August 24th** – Conserving Grasslands for Birds and Monarchs
- **September 28th** – Protecting and Restoring California's Overwintering Groves
- **October 26th** – Recovery of the Monarch Butterfly: Federal and State Legislation that can Provide Hope for this Iconic Animal
- **November 16th** – The Monarch Butterfly Fund – Supporting Monarch Conservation in Mexico
- **December 21st** – Eco-literacy and Conservation: The Convergence of Research, Policy and Education

* The November and December dates have been moved to avoid conflicting with major holidays. Please note this list is subject to change. Their EVENTS PAGE will have the most up to date information on the webinar series, as well as a calendar of additional monarch-related events, and information on recordings of past webinars.

THE NATURE FOUNDATION AT WINTERGREEN
April Guided Hikes

For information on **guided hikes,** difficulty ratings, and to register, please see this LINK to the April-June calendar.

NATIVE PLANTS FOR SALE AT THE NATURE FOUNDATION AT WINTERGREEN GREENHOUSE
725 Beech Grove Road, Roseland, VA 22967
Opening Saturday, April 3
9:00 AM – 12:00 PM

Call 434-325-7452 for more information, or Email: info@twnf.org. Most plants will be outside with limited access to space inside the greenhouse. Masks and social distancing are required. Call ahead for mid-week appointments after April 3. See this **LINK** for directions.

Spring Wildflower Symposium
Friday, May 14 – 17

Save the Date! Our virtual Spring Wildflower Symposium will kick off Friday, May 14 with Director Doug Coleman's introduction of the speakers, this year's theme, and a tribute to Mr. Jay Shaner, a devoted wildflower enthusiast. It is our hope to offer participants a way to get into nature, whether it is in person with us or the comfort from home. Stay tuned for presenter line up and schedule of events. Check this LINK for more information as it becomes available.

VIRGINIA COOPERATIVE EXTENSION (VCE) VIDEO LIBRARY

VCE offers a variety of **YouTube videos** on topics geared to both beginner and more advanced gardeners.

Examples of topics include:

Weed Identification
Basic Entomology and Insect Identification
Soil Testing Lab
Tree Risk Assessment

For these and many more videos that address specific topics or those of more general interest, see this **link**.

April in the Edible Garden

By Ralph Morini | April 2021-Vol.7, No.4

It’s April and edible gardening is in full swing. The air and ground are warming, buds are fattening and if you did some cool weather vegetable planting in March, you may soon be enjoying some early garden produce. If you haven’t gotten started yet, there is plenty of time to get things going for a productive gardening season.

Bed Preparation

As mentioned in previous articles, deep tilling is no longer a recommended practice, except for new beds where loosening compacted soils and integrating organic matter can make sense.

If you grew a cover crop over the winter, let it grow as long as possible short of letting it set seed. This enables deepest root penetration and greatest photosynthetic carbon deposits in the soil. To remove it, cut it as close to flush with the soil as possible, with a string trimmer or mower. If possible, leave the residue on the ground for a couple of weeks to let roots begin to decay, then use a stirrup hoe (some call it a scuffle hoe) to cut the crowns, just below soil level. Leave the cuttings as mulch if installing transplants or add them to the compost heap if you are planting seeds. Leave the roots to decompose in the soil and smooth the surface with a rake to present a nice seed bed.

Occultation is a no-dig alternative for weed control. It involves covering beds with a black plastic tarp or landscape fabric for 4-6 weeks to starve weeds of sun and kill seeds with heat. Remove the tarp and plant transplants directly. If seeding, rake off residue and compost it.

A broadfork at work, from the video, "The broadfork – Jean-Martin Fortier – The Market Gardener's Toolkit,"

To loosen compacted soil, drive a digging or broadfork as deeply into the soil as possible and rock it back and forth to loosen soil without destroying structure. Work your way across the beds. If adding an amendment like compost or manure, layer it on top and allow it to work into the soil during broadforking. Rake the surface smooth, and you are ready to seed.

Planting

If starting from seed, follow seed packet directions. For intensive or square foot gardening, ignore the row spacings and use seed-to-seed spacing in both directions. Goal is to space plants so that mature plants will just touch each other, helping reduce moisture and weed pressure while maximizing production for a given garden space.

Fertilization is important for best results. For guidance on what products to use and how and when to apply them, review Garden Shed article A Fertilization Primer.

According to Virginia Cooperative Extension's Virginia's Home Garden Vegetable Planting Guide, in Hardiness Zone 7a:

- There is still time to plant cool weather crops, including: beets, broccoli, cabbage, carrots, cauliflower, greens and lettuces, potatoes, spinach, radishes and turnips. They like it cool, however, so get them in soon.
- Late April is the earliest time to plant bush and pole beans, cucumbers, eggplant, melons, squash and tomatoes. These guys are harmed by frost, however, so check the longer-term weather forecast before setting them out or planting. Be prepared to protect them if a late frost sneaks into the region.

A Few Tips

- Where possible, **rotate your crops**, on a 3-4 year cycle to minimize pressure from soil borne diseases and pests.
- **Maintain a journal** to record crop locations, varieties planted, pest and disease issues, and growing success. You will be thankful when you plant next year.
- **Plant seeds** at a depth of about 2 times the seed width (not length). Moisten when planting and keep moist until germination.

Trellis. Photo: U of Minnesota Extension

- **Trellises** are a great way to save space and keep plants off the ground. VCE publication Vertical Gardening Using Trellises, Stakes and Cages offers guidance for a variety of space-saving plant supports.

Hardening-off seedlings. Photo: R Morini

- If you started seeds indoors, remember to **harden the plants off** by progressively exposing them to the outdoors for 1-2 weeks when outside temperatures are above 50 degrees, prior to transplanting.
- It is best to **transplant** on a cloudy day or in late afternoon to reduce shock to young plants.
- If transplanting **peat pots**, tear off the top of the pot to a point below the soil line to avoid wicking water away from plant roots.
- **Mulching plants after transplanting or germination** is a good thing but give the soil a chance to warm up before mulching to avoid slowing plant growth.
- When laying out **plant locations**, remember that leafy greens typically require 6 hours of sun per day while fruiting vegetables want at least 8 hours.
- **Consider intercropping**. Mixing different plant varieties uses space well, adds diversity to the garden environment, creates a variety of scents that can confuse pests, and attracts a broader array of beneficial predators, helping reduce pest damage.

Swiss Chard. Photo: Courtesy of Pixabay

- If you would like to extend the harvest season for your greens, **consider chard**. Chards have a lower tendency to bolt and can withstand summer heat longer than most other greens. In addition, rainbow chard makes a pretty presentation in the garden.
- Should a surprise **late frost** threaten your warm weather crops, a row cover can save the day. Review the Garden Shed article: Row Covers: A Garden Season Extender with Benefits for materials and construction tips.
- It isn't too late to plant asparagus or strawberry patches. For guidance on starting **asparagus** refer to the Garden Shed article Spear into Spring with Asparagus,and the VCE publication Asparagus, which specifies recommended cultivars for Virginia.

New strawberry bed: Photo Ralph Morini

- For **strawberries** and other small fruits check out the VCE publication Small Fruit in the Home Garden.
- If you are planning a **home orchard**, check out the VCE publication Tree Fruit in the Home Garden for help in site selection, tree selection and care for many popular fruits.
- Best **tree planting techniques** for both bare root and root ball trees is detailed in Planting Trees Correctly from the Clemson Extension.
- If you are curious about the weeds in the garden or its surroundings, for elimination or edibility, VCE's Weed Identification Guide is a good resource.

I hope you find this information helpful. Comments on content are welcome. In any case, enjoy your garden and please come back next month.

SOURCES:

Virginia's Home Garden Vegetable Planting Guide: Recommended Planting Dates and Amounts to Plant, Va.Coop.Ext.Pub. 426-331

Cover photo: Compost: Photo: Ralph Morini