

Gardening on the Shore

Spring, 2020

At This Challenging Time

The ESVMG organization is certainly in flux with our elected president leaving, Phil Goetkin stepping in as our interim president, and the Governor's directive to shut down all non-essential activities until June 10. As of March 31, volunteer hour accrual for all but solo activities (*such as writing an ESVMG newsletter article or radio program!*) is now restricted until further notice. We await the current EMG state office policies regarding the possible CE/hour accrual extension. We have been encouraged to follow the 'Stay at Home' orders and not work together on the ESVMG supported gardens. And there is no 'Save the Date' section in this issue because all meetings and activities have been cancelled or will be rescheduled.

Thankfully, our gardens are still out there beckoning us to come out and begin our Spring activities. And it's ok – even encouraged! – to get outside in our individual yards. We will have to be resourceful in our desire to establish new planting beds and may have to postpone some of our maintenance chores due to the unavailability of products or limited store hours. But, of course, there is plenty of weeding to do!

In this abbreviated issue of Gardening on the Shore, you will read about plants' nutritional needs, will be introduced to our new interns and get an overview of a popular topic now: Victory Gardens. You will be given tips on Spring gardening tasks and will revisit a section of Chapter 4 in the Master Gardener Handbook on Nutrient Management and Fertilizers.

It surely won't be long before we will be back to 'business as usual.' As Master Gardeners we will carry on until then.

Jane McKinley
Editor and ESVMG Publicity Chairperson

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Feature Article

PLANT NUTRITIONAL NEEDS

By Jane McKinley, ESVMG Master Gardener

Fertilization is an important part of landscape management. Plants need nutrients to survive, and while many of the essential elements are already in the soil, fertilizer is often added to supplement those nutrients. Fertilization is a common cultural practice often made complex and confusing by the wide variety of fertilizer products on the market. The simple objective is to supply plants with nutrients in a form they can use at the time they most need them in a way that produces a healthy, attractive landscape while being environmentally sound.

Soil

There are many factors to ensuring the growth of a healthy plant. Although this article focuses on fertilization needs, many aspects of the soil quality should be considered before embarking on a fertilization plan. For starters, how well does the soil drain? Is it rich in organic material? What are its properties in terms of sandy, clay, or a combination? And has recent construction occurred on the site? As the result of construction activities, the soil may be heavily compacted, poorly aerated, poorly drained, and low in organic matter. Native topsoil may have been removed and replaced with new “topsoil” deficient in essential nutrients and lacking desirable physical properties.



Amendments can improve soil structure, drainage, and nutrient-holding capacity, making the soil a more favorable place for root development and nutrient uptake. Soil improvement is a continual, long-term process requiring the regular addition of manures, compost and other organic matter. These amendments can raise the soil nutrient level to a point where the need for synthetic fertilizers is greatly reduced, and in some cases, no longer needed. It's also important to ascertain the pH of the soil. As Master Gardeners, we know that a pH of 7 is neutral with values below 7 constituting the acid range and values above 7 being more alkaline. The level of the soil pH influences the availability of nutrients to the plant. This is discussed in more detail in the section on 'Necessary Nutrients.'

It's a good practice to test the soil every three to five years. Each area in the landscape, i.e., garden beds, vegetable beds, turf, trees and shrubs, should have its own test in order to customize the fertilization plan for that area. A soil test is the only way to determine if phosphorus, potassium, calcium or magnesium must be added and if an adjustment to pH is required.

With only a few exceptions, the climate in our region causes soils to be moderately to strongly acidic. Consequently, liming can be critical for maintaining soil pH at optimal levels for plant growth. Over-liming, however, can induce micronutrient deficiencies by increasing pH above the optimum range. Many soils in Virginia have adequate phosphorus levels, making it unnecessary to apply more through fertilizers. These factors make it essential to rely on the results of a reputable soil test to determine the optimum fertilization plan.

Fertilization of landscape plants will not be effective unless adverse growing conditions are amended. In fact, unhealthy soil cannot sustain healthy plants and can lead to pollution of surface and groundwater through runoff.

Necessary Nutrients

Essential mineral elements are those that are required for normal plant growth and reproduction. Except for carbon, hydrogen and oxygen,

which are non-mineral elements supplied from the atmosphere, most essential elements are obtained from the soil. Plants vary as to the amount of each element required; however, all essential elements are critical for healthy plant growth.

Essential elements are divided into two groups, macronutrients and micronutrients, depending on the relative amount a plant needs in order to develop properly.

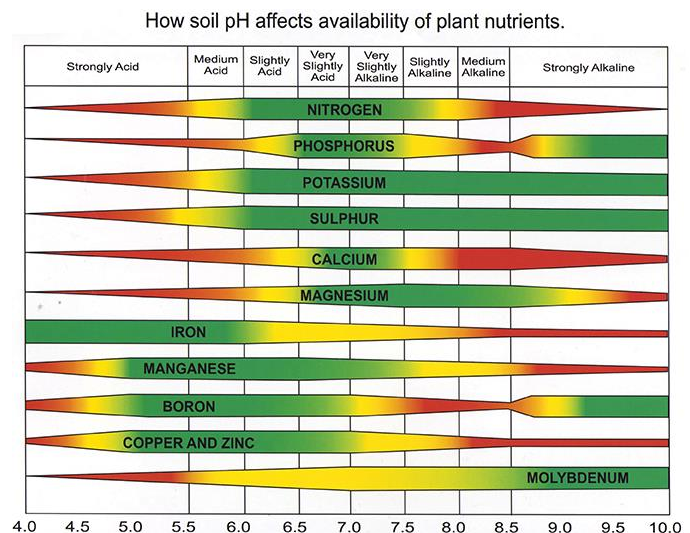
Essential elements are divided into two groups depending on the relative amount a plant needs in order to develop properly. The six elements found in soil that are used in relatively large amounts by plants are called macronutrients. They include nitrogen, potassium, magnesium, calcium, phosphorous, and sulfur. There are eight other elements found in the soil that are used in much smaller amounts. These are called micronutrients, or trace elements, and include iron, zinc, molybdenum, manganese, boron, copper, cobalt, and chlorine. Although micronutrients are required by plants in very small quantities, they are equally essential to plant growth.

Macronutrients contribute to the health of a plant in different ways. Nitrogen (N) is important for leaf and stem growth, provides the rich green color in a plant and is often the only element needed to accelerate plant growth. Unfortunately, nitrogen is also the most challenging nutrient to manage and cannot be measured through a soil test. Phosphorous (P) provides for root, flower, and fruit growth. It also is important for normal seed development and the

processes of photosynthesis, respiration and cell division. Potassium (K), derived from potash, helps build plant tissue and aids in disease resistance, stem strength, cold hardiness, and the production of chlorophyll.

A deficiency of these elements can be tricky to diagnose. There may be more than one deficiency symptom expressed and a single symptom may indicate more than one element needed. There are, however, some signs to look for which could provide clues that help lead to a conclusive diagnosis. Stunted growth may be the result of either nitrogen, phosphorus or potassium. Nitrogen deficiency is also evidenced by yellowing of leaves (chlorosis). Iron deficiency also results in chlorosis. Phosphorus deficiency may result in a poorly developed root system. Potassium deficiency, as well, is evidenced by poor roots as well as “scorching or firing” on leaf margins, developing first in the lower leaves. If these signs are evident, it is best to take soil and tissue samples to be analyzed and interpreted by your local extension office before applying fertilizer.

The pH condition of soil affects the availability of plant nutrients. A near-neutral, or pH range of 6.0 to 7.0, is generally the most beneficial to plants and may require no additional nutrients to improve plant growth. In highly acidic soils, with pH less than 6.0, the elements of calcium, phosphorous and magnesium become tied up and unavailable. At pH values of 7 and above, phosphorus, iron, copper, zinc, boron and manganese become less available. In general, most micronutrients are more available in acid than alkaline soils. As pH increases, micronutrient availability decreases, and the potential for deficiencies increase. Additionally, soil organisms grow best in near-neutral soil with many bacteria and earthworms unable to thrive in highly acidic soil.



Another consideration is the fact that nitrogen and phosphorus are major sources of pollution in our waterways, with fertilizer applications to home lawns and gardens contributing to the source of these excess nutrients. Because nitrogen is mobile in the soil, it can easily be washed away with runoff. Phosphorus binds to a soil particle which can be washed into streams and creeks. By increasing a soil’s ability to absorb water and minimize erosion and runoff, the conscientious gardener is working to prevent dangerous pollutants from washing into our waterways. *(continued on p. 9)*

Articles of Interest

MEET THE INTERNS



Rear, left to right: Chuck Maddox, Paul Tiffany, * Ray Schaney, Diana Schaney, Valerie Newman, Betsy Doherty, Julia Johnston, Paul Sears, John McCormick, * Stephen Rulison*

Front, left to right: Christina Murray, Eileen Brown, Cathy Beard, Debbie Brown, Robin Swert, Mary Wazlak, Christine Williams*

*Class Coordinators

Cathy Beard

Cathy retired in 2016 and resides half the year on Chincoteague Island where she has grandchildren and an unobstructed view of the Assateague Lighthouse. The other half of the year, she spends travelling and living outside D.C. on a property well established with azaleas, camellias, roses, old oak and cherry trees and an established herb garden.

The unique challenges on her property stimulated her interest in the Master Gardener program. Having retired from UMCP after 20+ years in the Botany and

Biology Depts, her familiarity with cooperative extension led her to pursue the program after learning about it from Jocelyn Grover.

She hopes to make her small property a special place for wildlife and to have beds for herbs and vegetables. She is enjoying “meeting new friends, learning about many of the small towns, and visiting various farms ...truly an educational and enjoyable program.” Cathy plans to volunteer at Heritage Day, the Museum Project, Ker Place garden and the Songbird Garden at the Chincoteague National Wildlife Refuge.

Eileen Brown

Eileen developed a love of both flower and vegetable gardening as a child from her parents which has continued into adulthood. In the 1990's, Eileen became "caught up" in collecting daylilies and incorporated them into her flower garden until the point when she had amassed approximately 400 varieties! She decided to start a small daylily business and expanded that to raising and selling hostas and other shade perennials. When the company she had worked at for 20 years closed, Eileen pursued an Associate Degree in Horticulture at a local community college. When her husband's health declined, Eileen closed her plant business, but her interests in plants continues. Eileen and her husband retired to Chincoteague in 2013 where she volunteers at the local library and pursues her interest in quilting. She is looking forward to volunteer opportunities through Master Gardeners.

Betsy Crites-Doherty

Betsy and her husband, Dave, are working on a house in Cape Charles that they hope to move into by the end of June (fingers crossed!). They moved last summer from Newport News to a temporary residence in Onancock. Originally from a small town in West Virginia, Betsy wanted to leave the city. She registered for the Master Gardener class "to learn about flower and vegetable gardening on the Eastern Shore and to meet other residents with similar interests." On both accounts, she is very happy with the results! Now that Spring has sprung, Betsy is eager to landscape her new yard which is currently covered with building supplies.

By profession, Betsy is a social worker, most recently having worked for a large social service agency in Virginia Beach. When they moved to the Eastern Shore, it was an ideal time to take a break from her "high burnout profession." Her present job is as a carpenter's apprentice to Dave, doing some of the work themselves on their new house. When not busy with that job, Betsy is "plotting and planning flowers, trees, and vegetables."

Betsy is very pleased to be a part of Eastern Shore Virginia Master Gardener system and looks forward to "meeting all of you and participating in the wonderful programs that all of you have so successfully created and maintained."

Julia Johnston

Julia grew up in England. She and her husband George (a graduate from the NY French Culinary Institute), moved to the Eastern Shore from NY via CA and FL one year ago. They purchased an old Colonial house in Exmore which they have been lovingly restoring. They are both into Viticulture and organic vegetable gardening after having had a very successful (albeit small) vineyard in NY where George produced his own wines. Having just cleared a bamboo forest from their property, they now have a clean slate to establish their raised vegetable and herb beds and to extend the vines, hops, and fruit trees they planted last year."

Chuck Maddox

Born in CA, one of the first pictures of Chuck was working in a family garden with his grandparents. Since then, he has always loved gardening and saw the Master Gardener's program as an extension of a hobby he's always loved. In 1965 he graduated from Rutgers University, was married to his college sweetheart, Susan, and began a career in the computer industry. For the first 16 years, he worked in sales and sales management with IBM followed by Apple for 10 more years. He then started his own computer support services company; and after 30+ years of work, he retired. Since 1972, he and his wife have split their time between their Philadelphia and Chincoteague residences.

Chuck has always liked to stay busy - first with his children's lives and now with his five granddaughters - recently watching two of them play college lacrosse. Keeping busy extends to lots of worldwide travel and cruises and being active on many Boards, currently as Treasurer of his condo board, as they embark on a million dollar+ project. The Master Gardener program "inspires me to expand my 'horizons' in gardening, and I look forward to that extension of my life.

Christina Murray

Christina has had a love of plants and the great outdoors her entire life. She had 35 plants inside her house at one time, with no sunroom. She has often "fiddled with a garden;" and plants can feel her love and thus thrive.

Christina recently (May 2018) retired to Chincoteague and immediately created a vegetable garden. Despite the late start, the garden provided an abundance of

tomatoes, eggplants, peppers, herbs, and a variety of beautiful flowers. Having no 'book knowledge,' the Master Gardener's program was the perfect curriculum enabling her to "take it to the next level." As an added perk, her training provides an opportunity to share newly gained knowledge and love for plants with others. Cathy's "perfect retirement pastime!"

Diana Schaney

Diana was born and raised in Butler, PA, (North of Pittsburgh), and started her career in nursing after graduating from Lutheran Hospital School of Nursing in Baltimore. She married her childhood sweetheart and worked as an operating room nurse in hospitals across the country while her husband, Ray (also in the Master Gardener class) served four years in the US Air Force and finished his education. They settled in Erie, Pa in 1976 where Diana continued with nursing. She later attended Edinboro University, graduating with a degree in accounting and earning her Certificate in Public Accountancy (CPA). Diana worked for another 30 years and retired as a partner from a regional Public Accounting firm.

Diana and Ray maintain a residence in Erie part time and Chincoteague part time since retiring. Diana's hobbies (other than growing things) include cooking, canning, reading and traveling.

Ray Schaney

Ray and his wife Diana have taken family vacations to Chincoteague Island nearly every year since 1968, purchasing a home 5 years ago after their children and grandchildren expressed an interest in continuing the family tradition.

Originally from Butler, Pa, they settled in Erie, Pa in 1976 after Ray completed 4 yrs in the Air Force, a degree in Physical Therapy from the University of Pennsylvania, and (later) a doctorate in Clinical Electrophysiology. Since retiring in January 2019, they spend several months of the year on the Eastern Shore (instead of a couple weeks). Ray learned of the Master Gardeners program from a dear friend several years ago but had to wait for the right opportunity to “engage.” His horticultural education growing up was practical experience, with little or no scientific basis. “It has been a lifelong goal to return to my roots” said Ray with a scientific understanding of what to do, when to do it, and why.

Paul Sears

Paul Sears was an educator in New Jersey since 1980. He enjoyed the roles of high school science teacher, supervisor, and principal. He began work as an adjunct professor in 1997 and most recently taught courses in a “Masters in Educational Leadership” program and undergraduate courses in education. Paul has also been a student of neuroscience since the mid-1990s. As a student of neuroscience since the mid-1990s, Paul’s interest in the subject led him into classroom research, workshops for teachers and writing the book Brain Whys with colleagues.

His project since 2014 has been small-scale sustainable gardening on the Eastern Shore of Virginia and becoming a Master Gardener. Paul’s passions are the out-of-doors, vegetable gardening and helping educators to be effective and to love teaching kids.

Robin Swert

Robin was born in Ohio, the youngest of five children. Her mother was the daughter of a farmer, so gardening, sewing and 4-H were the solutions to summer boredom. Robin retired after 35 years at the USPS, 20 years as a rural mail carrier and 15 years in management. She graduated from George Mason University in 2012 with a B.S. in Psychology and worked as a Mental Health Counselor for a year.

She has two children who continue the family tradition of husbandry and gardening when they aren’t working. Her daughter, Sandra works as a doctor and her son, Jim, is a fireman, EMT and rescue diver. Her only grandson, Carlo is 16 and goes to school at Nandua H.S. Currently, Robin assists in running the household for her daughter and helping with child care for a pair of doctors working for Rural Health here on the Shore. She also belongs to the Woman’s Club of Accomac County and occasionally assists with Sunday School at St. George’s Episcopal Church in Pungoteague.

Mary G. Wazlak

Mary Wazlak moved to Belle Haven with her husband, Al, in 2015. Her first introduction to the Eastern Shore came over 40 years ago when she worked as a Regional Biologist for the State Water Control Board. Water quality monitoring introduced her to the incredible ecosystems and agriculture of the Virginia peninsula and Tangier Island. She and Al live in a naturally wooded part of a neighborhood development, “a challenge in itself,” with native plants balancing edible gardens. Since Mary was apprenticed as a rehabber

with Wildlife Response in Virginia Beach, she maintains an active interest in environmental protection, art and photography. A past Education Director with Nauticus and ODU Elderhostel, Mary continues her own learning through our community with conservation and health-oriented goals.

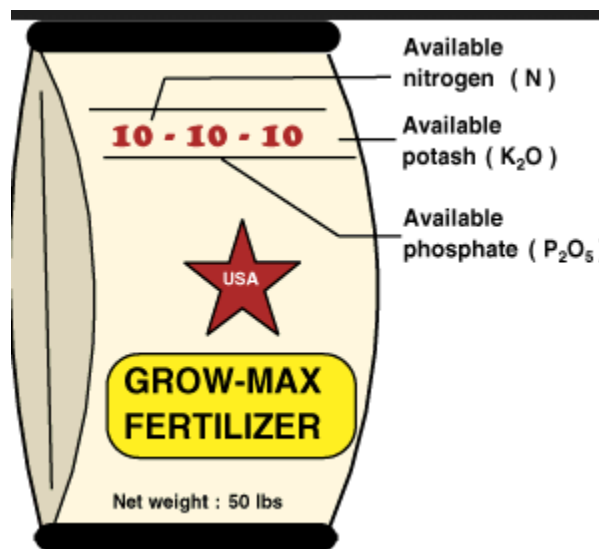


PLANT NUTRITIONAL NEEDS

Continued from p. 2

Fertilizer Qualities

Macronutrients are most often applied in commercial fertilizers or in manures and are labeled with three numbers that give the percentage by weight of nitrogen, phosphate and potassium (NPK). Micronutrients are normally applied as soil amendments or are components of fertilizers that carry the primary nutrients. The analysis, or grade, of a fertilizer refers to the minimum amounts of NPK in the fertilizer and is always printed on the fertilizer label. A fertilizer with a 10-10-10 analysis contains 10% nitrogen, 10% phosphorus (phosphate), and 10% potassium (potash). For example, in 100 pounds of 4-8-12, there are 4 pounds of nitrogen, 8 pounds of phosphorus and 12 pounds of potassium.



Organic fertilizers usually contain relatively low concentrations of actual nutrients, but they perform other important functions that the synthetic formulations do not. These functions include increasing organic content of the soil, improving physical structure of the soil, and increasing bacterial and fungal activity. Cottonseed meal, blood meal, bone meal, hoof and horn meal, fish emulsion, and all manures are examples of organic fertilizers. Nutrients from these sources are released only by microorganisms decomposing the organic matter.

Because nutrients are released over an extended period of time, slow-release fertilizers do not have to be applied as frequently as other fertilizer types. Also, applying higher amounts of slow-release fertilizer can be applied without risking injury to plant roots. Slowly released nitrogen is used more efficiently because a higher percentage is absorbed by plants. The higher efficiency of slow-release fertilizers means less nitrogen is available to contribute to pollution of surface and groundwater.

“Combination” products that contain fertilizer mixed with an herbicide, insecticide, or fungicide should be considered carefully. These additives should be selected and applied based on the plant being grown and the pest(s) being managed. Often, the timing for a fertilizer application does not coincide with that of another product, and off-target or unintentional injury to the plant could result from a combined application.

When to Fertilize

Fertilizer should be applied when plants need it, when it will be most effective, and when plants can readily absorb it. Research shows that plants actively absorb nutrients from the soil during the growing season and require few nutrients during the dormant winter season. In general, apply fertilizer as soon as plants begin breaking dormancy in the spring and avoid fertilizing after the first fall frost, which may stimulate new growth that is not winter hardy.

Do not fertilize during stressful environmental conditions which cause plants to slow their growth. Drought conditions result in insufficient soil moisture, reducing nutrient absorption which could increase the potential for root injury from fertilizers. Too much rainfall or irrigation can cause nutrients to run off or leach.

In addition to season, how and when to fertilize landscape plants depends on a number of factors including the objective to stimulate new versus maintain existing growth, plant age

Lawn Fertilization Guidelines
from VCE ‘Green and Clean’ Publication

Step 1 - Know Your Lawn	Cool-season lawns stay green through winter, turning brown in summer if dry. Warm-season lawns turn brown in winter and grow in summer. Apply fertilizer when your lawn is actively growing and never before your lawn has greened up or after it has turned brown.
Step 2 – Test Your Soil	Soil testing tells you how much fertilizer your lawn needs. Contact your local Virginia Cooperative Extension office for a soil test kit and, if needed, ask your extension agent for help interpreting the results.
Step 3 – Properly Fertilize Your Lawn	You may not need to fertilize but, if you do, use slow-release nitrogen fertilizer. Shop for fertilizer labeled slow-release nitrogen, water insoluble nitrogen or “WIN.” If not slow release, try reducing the application rates suggested on the fertilizer bag by a third or half and monitor your lawn’s response. Whatever you decide, don’t exceed 0.9 pounds of nitrogen per 1,000 square feet in a single application.
Step 4 – Immediately Sweep Off Excess	Sweep excess fertilizer from paved surfaces into the lawn to prevent it from washing off when it rains and ultimately running into the waterways.
Step 5 – Follow Healthy Lawn Practices Year-Round	Mow your lawn 2” -3” or higher. Taller grass produces a deeper, more extensive root system which increases nutrient uptake, reduces runoff and lessens the need for irrigation. Help your grass soak up rainwater by aerating and topdressing with a quarter inch of compost once or twice per year while your grass is actively growing. Retain clippings and mulched leaves on the lawn to add organic matter and improve water infiltration and soil health.

(generally more fertilization is needed by younger plants), and plant stress levels (additional fertilizer may benefit stressed plants unless under drought conditions).

NOW'S THE TIME FOR A VICTORY GARDEN

by Jane McKinley, ESVMG Master Gardener



With more time on our hands these days due to Stay at Home orders throughout the country, more and more people are wondering how to stay occupied. We could take a walk, visit with friends via social media, read a book or binge those series that we've been wanting to watch. We could also consider improving our health and sense of wellbeing by planting a Victory Garden.

The term "Victory Garden" was coined during World War II with credit going to George Washington Carver who encouraged people to supplement their diets in the face of produce shortages during the war. His bulletin entitled "Nature's Garden for Victory and Peace," published in March 1942, got the ball rolling on this idea. Wartime needs stretched the limits of agricultural production. The United States not only had to feed its own civilian and military population, but many of its Allies relied on

America's breadbasket. While the need expanded, the number of farm workers decreased due to the draft and other factors.

For the average American, the Victory Garden was a practical way to contribute to the war effort. These gardens were used along with Rationing Stamps and Cards to supplement the diminishing public food supply. Besides indirectly aiding the war effort, these gardens were also considered a civilian "morale booster," empowering gardeners through their contribution of labor and enabling them to receive the tangible reward of feeding their families better through growing their own produce. This made Victory Gardens a part of daily life on the home front.

Some 20 million Victory Gardens were planted (US population in 1940 was 132 million – today it's over 330 million), and by 1943, these little plots produced 40 percent of all vegetables consumed in the US. It's estimated that 9-10 million tons of vegetables were grown. Victory Gardens sprang up on farms, in backyards, and on city rooftops. Even some window boxes were converted from flowers to vegetables. Communal gardens were planted in public spaces such as parks, vacant lots and baseball fields. Sites for these gardens included San Francisco's Golden Gate Park, Boston's Copley Square and Fenway Park which is still an active Victory Garden today.

In today's world, we are lucky to have the basics of what we need available at the grocery store, albeit, prices continue to rise and it can be hard to find local produce there. If our garden fails due to factors outside of our control such as drought or disease, we won't go hungry. Thousands of seed varieties from anywhere around the world are available online, and we don't have to rely on seed saving for next year. We have easy access to supplies and ingredients to enable us to freeze and can our fresh vegetables. With all these benefits and with time on our hands as we fill our available at-home hours, it just might be the right time to try your hand at growing a Victory Garden!

The advantages of growing your own fruits and vegetables are many. Gardening can be a family activity with children often fascinated by the process of planting and watching the garden grow. They may even be bold enough to sample an unknown vegetable if they had their hand in growing it! Gardening offers health benefits such as burning calories (one can burn about 330 calories in one hour of light gardening work), lowering blood pressure ([The National Heart Institute](#) recommends gardening for 30-45 minutes to control blood pressure). Gardening exposes you to vitamin D for strong bones and fresh air to clean your lungs and give you more energy. And, of course, gardening motivates you to eat a healthier diet. The gardener can enjoy fresh, locally grown, organic produce and feel good that no harmful byproducts were released in transporting them.

Spring is a perfect time to get started on growing your own garden. Cool weather vegetables such as lettuces, arugula, kale, spinach, and radishes have a short time to maturity and produce a robust yield. The growing conditions at this time of year are relatively low maintenance with plenty of rain and fewer weeds and bugs. Summer months give us delicious tomatoes, melons, beans and peppers. By starting small with a garden more easily managed, one can learn the tricks of how to best irrigate and fight off disease and insects. And a fall garden can repeat the pattern of the spring, with some produce surviving into the winter months.

Excerpt from a WWII
U.S. Dept of Agriculture Bulletin

- DO prepare the soil. You can't live without food and neither can a plant. You need air – so does a plant! So break that soil up. Make it rich with humus and fertilizer.”
- DO cultivate your garden. If you want your plants to grow up and be nice to you, shower them with loving care (and cultivation).
- DO make a compost heap. It's nature's gift to gardeners and a lazy man's joy!
- DO plan your garden on paper before you start. You are going to have a big family of vegetables this summer – better plan for them now!
- DON'T think gardening is mysterious or difficult. It does take planning – it does take work – but a lot less then you may think it does.
- DON'T kill yourself. If you plan too much space and do not have the time to take care of it, well, that's silly!
- DON'T think you know more than the man who grew your seeds. You will find directions on the back of every packet of seeds. Read them carefully and follow them faithfully!

There's nothing better than a warm tomato fresh from the vine! And there's no more tangible measure of one's power to cause positive change than to nurture a plant from seed to fruit-bearing! Growing a Victory Garden is a good way to improve your outlook and get a little healthier. What's to stop you from giving it a try!

Gardeners' Tips

EXCERPT FROM MASTER GARDENER HANDBOOK

The feature article discussion in this issue focuses on plant nutritional needs and provides guidelines for fertilization. It is important, however, to know the risks to our waterways and bodies of water due to the inappropriate applications of fertilizer. The following excerpt provides insight into the primary sources of pollution and how to best manage our fertilization activities.

Nutrients as Pollutants

Nitrogen and Phosphorus are currently major sources of pollution in our waterways. Excess nutrients come from sewage treatment plants, automobile exhaust, animal wastes, excess nutrients applied to agricultural fields, excess nutrients applied to home lawns and gardens, failing septic fields, etc. These pollutants can come from organic sources or synthetic sources. Once these nutrients are in the water, they become available for algae to use and grow. This large and quick growth of algae is referred to as an algae bloom. Once the algae has used up the available flush of nitrogen and phosphorus, the algae quickly dies and begins to be broken down by bacteria. The increasing bacterial population, which uses oxygen to help break down the algae, causes a crash in the oxygen levels in the water. When the water is low in dissolved oxygen, fish and other aquatic animals perish.

Nitrogen is mobile in the soil. It can easily leach out of the soil or run off the soil surface with the movement of water. Nitrogen easily ends up in waterways where it contributes to algae

blooms. Phosphorus, on the other hand, is not usually mobile in the soil. Phosphorus binds with clay particles and organic matter in the soil. Plants are then able to use the phosphorus associated with organic material and soil particles. Phosphorus usually becomes a pollutant in our waterways when it is washed into streams and creeks while attached to a soil particle. Thus, it is important to limit the amount of soil erosion. Another factor that makes phosphorus toxic to our waterways is the fact that algae are much more responsive to phosphorus than to nitrogen. This, a small amount of phosphorus can cause the same algae bloom as a much larger amount of nitrogen. High rates of phosphorus have been seen in soils that have had repeated applications of fertilizers containing phosphorus.

Because nitrogen and phosphorus have been identified as pollutants one might expect Virginia Cooperative Extension to recommend not using fertilizers on lawns and gardens in the future. The answer is much more nuanced than this. When plants have the nutrients they need

available to them, the plants are healthier; they grow thicker and denser and their roots are stronger. They hold soil better and limit erosion. Thus, these plants help to limit the amount of nitrogen and phosphorus that end up in our waterways. Conversely, if plants don't have enough nutrients to thrive and stay healthy they are often spindly and small; they may not be able to hold soils in place as well as we would like and may contribute to soil erosion. Thus, the results of a soil test are invaluable in helping to determine the need for nutrient amendments, as well as the form and amount needed. Nutrients are beneficial when applied in needed situations; misapplied nutrients become pollutants.

Our communities are making concerted efforts to help reduce the amount of phosphorus and nitrogen that ends up in our waterways. Virginia law prohibits the sale of synthetic fertilizers with phosphorus for maintenance purposes. Phosphorus fertilizers are, however, allowed to be used to establish new plantings or for use on sites that are low in phosphorus according to a soil test.

From Master Gardener Handbook
Chapter 4, "Nutrient Management and Fertilizers"



SPRING GARDENING TIPS

There are so many tasks to be performed in the Spring, these are only a few ideas to get you going. Most of these tips were taken from the Old Farmer's Almanac for the month of April.

1. Mulch your garden well to preserve moisture and keep down weeds. Also rake off mulch from vegetable beds to allow the soil to warm up faster. Once warm, rake the mulch back on.
2. Divide herbaceous perennials, clumps of bulbs, and ornamental grasses if the garden looks too crowded. Replant or give away!
3. This is a great time to plant and/or many bulbs such as: canna, caladium, blood dilly, and iris.
4. Remove any weeds in your garden, as they compete with your plants for water and nutrients. Also, by removing them early in the season, this will reduce the amount of weed removal you will need to do later in the summer.
5. Prune spring-flowering shrubs after they finish blooming. Fertilize azaleas, camellias, and any other shrubs that need fertilizer. Reference the VCE [Guide to Successful Pruning](#) for guidance.
6. Watch out for insects such as aphids and use an insecticidal soap spray if needed. See Almanac.com/Gardening and search on keyword: Pests. Catching them early gives you a good head start and will be more effective.
7. Plant an herb garden. Basil, oregano, chives, sage, rosemary, and thyme are good choices.
8. Plant your summer containers and bulbs. Wait, however, until the last frost date has past which is April 16 on the VA Eastern Shore.
9. Clean up all dead branches, fallen leaves and other plant debris that was left over the winter to support wildlife.
10. Plant cool season vegetables such as kale, spinach, arugula, broccoli, snow peas and brussels sprouts.



Eastern Shore of Virginia Master Gardeners

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