In Season with MGPW

the quarterly of the Master Gardeners Prince William

Spring 2021

eastern red columbine (*Aquilegia canadensis*)
photo by Jason Alexander

Spring

PRESIDENT'S MESSAGE

I want to thank everybody for the contributions you have made in the past, the present, and future to the Master Gardening World. It makes our community a better place to be and helping is a great way to live in our world.

We can see the light at the end of the tunnel, and I am pretty sure it is not a train coming down the track. COVID-19 continues to be the major impact on our lives in both large and small ways. If you have not gotten your Covid shot(s) please think hard about the advantages, and get it for you and the people you care about. Life is changing for the better but will continue to be hard for folks who have lost their jobs, cannot pay the rent, put food on the table, or lost loved ones. Covid has left over 500,000 empty chairs at tables across the country and impacted all of us in ways large and small.

The master gardening world is slowly returning to near normal post Covid shutdown. We are starting to plan for real outreach. There will be a socially safe plant sale at the end of the month as was done in the fall. Leslie Paulson and her team are doing a great job at the (*continued p. 5*)

VIRGINIA MASTER GARDENER ASSOCIATION (VMGA) - *WHY JOIN?*

except from VMGA:

Why Join? The professional society… VMGA is the professional society of VCE-Master Gardener volunteers. Just as some join a professional society associated with a career field, Master Gardeners join VMGA. VMGA shares the mission of professional societies - continuing education, networking and communication.

The voice of Master Gardeners… VMGA is the voice of Virginia Master Gardeners as the statewide association. Through meetings with VCE and VT leadership, the web site and newsletter, you are kept abreast of news and issues. These vehicles also provide information from other units which will enable you to improve the efforts in your local unit and to enhance your experience as a volunteer.

Because VMGA needs you… VMGA needs your support. Our voice will be stronger with you as a member. ◇◇◇

INSIDE THIS ISSUE

TOPICS OF INTEREST

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LAWN CARE FOR PWC

Virginia is part of a transition zone between areas where cool and warm season grasses thrive. This can make lawn care in our area challenging. If you're a first time homeowner, new to Prince William County or just looking to better manage your lawn, Virginia Cooperative Extension can help.

We offer help with interpreting soil test results, information on cultural practices, pest identification and pest control recommendations.

For more assistance with lawn care, contact the Virginia Cooperative Extension Environmental Educator at 703-792-4037 or BESTlawns@pwcgov.org.

The BEST Lawn Program can sample and measure your lawn for you and provide you with a fertilizer schedule that will help promote a healthy lawn.

tree peonies, 'Guardian of the Monastery' from Song Sparrow Farm & Nursery

LAWN: *SPRING THINGS FOR THE LAWN*

excerpts from *Spring Things for the Lawn* with Dr. Goatley, Virginia Cooperative Extension:

- ◊ Go to the www.vt.edu website and search for Turfgrass Variety Recommendations in order to help you select the RIGHT grass.
- ◊ There is never a 'wrong time' to soil test. Soil test every 3-4 years. A soil test provides you with science-based results to improve the health of your soil...think of it as a 'physical' for your lawn and garden.
- ◊ What are the concerns with aggressive spring fertilization of cool-season lawns? Promoting too much shoot growth at the expense of root growth for either grass (warm or cool-season).
- ◊ Cool season mowing for spring/summer: Follow the 1/3rd mowing rule. Begin to slowly raise cutting heights on cool-season grasses BEFORE summer stress arrives...take advantage of developing as extensive a root system as possible BEFORE summer stress arrives.
- ◊ Warm season mowing for spring/summer: Begin the spring mowing season by mowing/removing as much of that brown material as you can. Don't forget to raise the mowing height in late summer.
- ◊ Spring planting: Fall is the preferred time for planting cool season turfgrasses. ◊◊◊

PRIZED PLANTS: TREE PEONIES IN GLORIOUS BLOOM!

by Nancy Burns, former Master Gardener from Fairfax/Arlington

Tree peonies are different than regular peonies in that the former has woody stems, does NOT die back to the ground every fall. Plus tree peony flowers are much larger than regular peonies.

The variety shown at the left is 'Guardian of the Monastery', purchased on-line at Song Sparrow Farm & Nursery, Wisconsin. ◊◊◊

A documentary film by Karen Cantor at Singing Wolf Documentaries

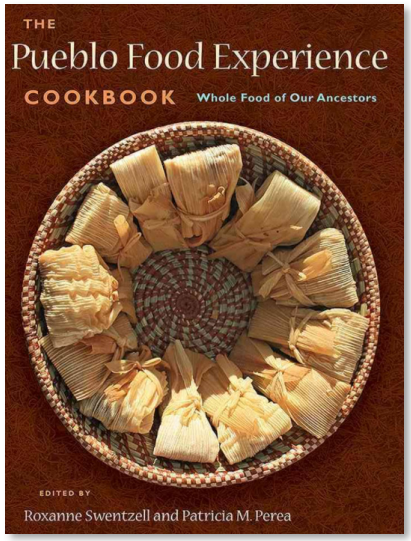
GARDEN TO TABLE: *RETURN - NATIVE AMERICAN WOMEN RECLAIM FOODWAYS FOR HEALTH AND SPIRIT*

by Maria Stewart, Master Gardener Volunteer

I recently had the opportunity to see the documentary, *Return—Native American Women Reclaim Foodways for Health and Spirit*. It was eye-opening.

In the documentary, Native American women share personal stories about their communities' struggle with health issues caused by poor nutrition and unhealthy lifestyles. As Native Americans were rounded up on reservations, they were denied access to their traditional foods. Instead, they had no choice but to eat foods high in unhealthy fats and sugar resulting in generations of people suffering from diabetes, heart disease, and stroke in much higher rates than the non-Hispanic population.

Return focuses on Native American women reclaiming their health, and the health of their communities by embracing traditional ancestral foods. The documentary shows how the women use food their ancestors would have eaten, gathered or raised from the land on which they also live to promote a healthy lifestyle.



Watching the women talk about and prepare the food made me hungry. It also reminded me of a restaurant featuring Native American cuisine that we visited while in Denver, CO—Tocabe. It was a new experience for us, and I'm so grateful we gave it a try. It was unique, delicious, and by-the-way, healthy. I plan on exploring more Native American dishes, and encourage you to do the same. *The Pueblo Food Experience* is one place to start, or try the recipe to the right. ◇◇◇

RECIPE:

Wild Gitigan Salad

Ingredients

For the salad:

4 sprigs fresh thyme
1½ cups whole wild rice
3 cups low-sodium vegetable broth
1 cup cooked black beans (if using dried beans, 1/3 cup dried yields 1 cup cooked)
2 bunches (about 8 cups) kale
1 cup baby tomatoes or ground cherries, rinsed and halved
½ cup grated pecorino Romano cheese or parmesan cheese

For the dressing:

Juice of 1 lemon (about 2 tablespoons juice)
1 tablespoon fresh grated lemon zest
¼ cup extra virgin olive oil
¼ teaspoon salt & freshly ground black pepper

Directions

Cook the black beans. Either soak beans overnight or use the quick-boil method. Then, add beans to a pot of fresh water, and boil until done, about 1-2 hours. Set aside to cool.

Meanwhile, cook the wild rice. Rinse the rice well in a bowl of cold water and drain. Add rice, vegetable broth, and thyme to a pot and simmer for 20 minutes. Remove from heat and let the rice stand in the pot, covered, for 5 minutes. Remove the thyme stems and fluff the rice with a fork. Set aside to cool.

Wash the kale and remove the ribs. Thinly slice the kale into ribbons. Using a salad spinner, spin until most of the water is gone.

In a large serving bowl, add the kale, a drizzle of olive oil, and a little salt. Massage the kale until it starts to soften and wilt, about 2 to 3 minutes. Set aside while you make the dressing.

To make the dressing: In a small bowl, whisk together the lemon juice, lemon zest, salt & pepper, and ¼ cup of olive oil.

To serve, add the wild rice, black beans, tomatoes or ground cherries, and sprinkle with cheese. Drizzle the dressing over top and toss to combine.

source:
First Nations Development Institute

OUT AND ABOUT:

CHANTICLEER, WAYNE, PA

by Jamie Nick, Master Gardener Volunteer

Please enjoy this Chanticleer program, shared by the Garden Club of Lake Ridge - a tour with Katharine Startup, an assistant horticulturist.

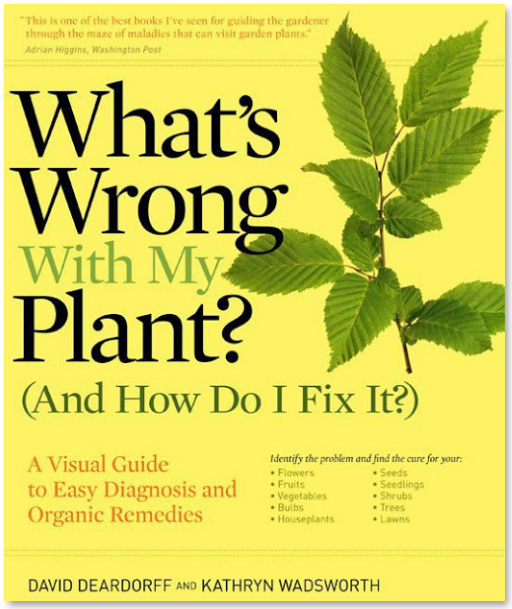
click here and enjoy

"There's plenty of detail without bogging the reader down in overly scientific or lengthy explanations."

BOOK NOOK: *WHAT'S WRONG WITH MY PLANT (AND HOW DO I FIX IT?)*

BY DAVID DEARDORFF AND KATHRYN WADSWORTH

by Maria Stewart, Master Gardener Volunteer



What's Wrong With My Plant (And How Do I Fix It?), by David Deardorff and Kathryn Wadsworth, provides easy to understand and easy to access information to identify and solve some of the most common horticultural problems. Part 1 of the book addresses *What's Wrong?*, walking the reader through well-illustrated flow charts based on observable symptoms. Once diagnosed, Part 2, *How Do I Fix it?* offers natural and organic solutions, detailing what a particular solution does, how to use it, and possible side effects. There's plenty of detail without bogging the reader down in overly scientific or lengthy explanations. Part 3, *What Does It Look Like?* is a captioned photo gallery of plant problems, which helps with identification in the real world. This guide is my first stop when trying to figure out what's going on with my plants. I hope you find it useful too. ◇◇◇

MASTER GARDENERS PRINCE WILLIAM TEACHING GARDEN

The Teaching Garden is a project of the Master Gardener Volunteers. It began as a garden to grow fresh produce for the Plant a Row for the Hungry project and a place where Master Gardeners could teach homeowners how to grow vegetables. The Teaching Garden displays low maintenance gardening techniques that homeowners can implement in their own gardens. It also features plant material that grows well locally.

View the Teaching Garden Brochure which contains a map of the teaching garden bed layout. View the upcoming events at the Garden here as well as other horticulture classes offered by the Master Gardeners.

Stay Up-to-Date on the latest from the Teaching Garden!

The Teaching Garden blog

photo by Lynne Lanier Master Gardener Volunteer

Master Gardener Jimmie Jones at the Boys and Girls Club as seen through a patch of zinnia photo by Jason Alexander

INSIGHTS: GARDEN PREP THROUGH THE AGES

by Abbie & Vincent Panettiere, Master Gardener Volunteers

Each year as spring approaches, anticipation overwhelms me and I greedily scan through an assortment of class announcements, and articles in magazines, newspapers and other sources with suggestions for preparing your garden before you plant. Wayside Gardens caught my eye with an excellent and concise piece that had eight sections covering what you should do. It's well worth reading but, to be brief, you should:

1. Get all of your equipment in order, cleaning and disinfecting tools, being sure your lawnmower has fresh gasoline in it and be sure you have enough supplies, tomato cages, soil amendments and such;

2. Rake out your gardens, putting newer mulch in bins to decay, leaving behind the small part that may have decayed over the winter, and getting rid of all weeds if possible. Removing the weeds is very important since new mulch will help to keep them from developing, but if they're up already, they may give your seedlings serious competition for living space.

3. Prune trees and shrubs except for those that bloom on old wood. Certain bushes set buds for the next year's show a month or so after they have finished blooming. If you prune them after that time you will cut off the flowers for the next year. Examples of trees and bushes not to prune in the spring: spring-blooming Spirea, Camellia, Rhododendron (including Azalea), Forsythia, Hydrangea Macrophylla (Bigleaf), Syringa (Lilac), Magnolia, Kalmia (Mountain Laurel), and Weigela. Examples of trees and bushes that should be pruned in the spring include: Buddleia (Butterfly Bush), Cornus Canadensis (Flowering Dogwood), Lonicera (Honeysuckle), Hydrangea paniculata, Cercis (Redbud), summer-blooming Spirea, Lagerstroemia (Crepe Myrtle), Rose, and Wisteria.

4. Prepare the soil. When the soil has warmed enough that it becomes workable, you should turn the soil over several times, working in any decayed mulch to loosen it, unless you're using a no-till system. The no-till system has become popular because it is supposed to avoid breaking up the underground soil structure, releasing nutrients too fast, breaking down the mycorrhizal structures plants rely on as well as limit the damage of erosion that can be seen in farmland that has been plowed and left bare.

After you have done the soil preparation, have your soil tested if you haven't done so in

PRESIDENT'S MESSAGE
(*continued from p. 1)*

Teaching Garden in a time when it is hard to get things done.

The farmers markets in Dale City and Manassas will start up in person (and socially distanced) the first week of June. We are looking forward to getting back out in the public and answering folks' questions in person. Look for more information on sign-ups coming soon. I am excited with the idea of actually getting out again and talking to people live and in person!!!

As master gardeners we have been limited to zoom and other socially distanced events. These zoom sessions have been very well attended and feedback has been great from the participants. I am guessing it will become a permanent part of how we do business in the future.

We continue to look for folks who would be interested in serving on the board or the various committees. If you have any interest, please reach out to any board or committee member.

Please reach out to any board member if you have any comments or questions.

Everybody stay safe and stay healthy. Get a shot for yourself and everybody else in your world!

Take care,

David Robison, President, MGPW, President@MGPW.org

Insights: Garden Prep Through the Ages

Sources & For More Information

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For gardeners with a sense of history
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By K. Kris Hirst
Updated May 06, 2019

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Slash-and-burn farmers: villains or victims?
T Rambo

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agriculture

several years. You need to know what the pH is (test to see if it's acidic, basic, or neutral) and nutrient levels. Based on that, add compost and other soil amendments.

5. Prepare or construct new garden beds to be sure you have room for everything you want to plant. If you're apt to buy just about every flower, bush or tree you see this may be extremely difficult.

6. Divide perennials. They all spread and, for the sake of their health, should be divided every few years. This gives each newly divided plant space to grow and, as an added plus, it gives the gardener more – and free! - plants to enjoy.

7. Start planting. For some of the more tender crops such as tomato, various herbs, peppers and the like, you might start seed indoors under plant lights or perhaps in a sunny south-facing window. The seed packet will suggest starting indoors anywhere from six to ten weeks before the last frost. The last frost in our area, is generally around April 15th.

There are various hardy vegetables that can be planted outdoors before that date such as onions, potatoes, artichokes, peas and some lettuces. Be sure to follow instructions on seed packet.

8. Apply mulch. A thick layer of mulch will help to keep weeds from sprouting up. If you are planting seed outdoors, you'd want to wait until the plants are up and visible before mulching that portion of the garden, but if you've put in starter plants, by all means put a thick layer of mulch around them to keep the weeds at bay.

That's a short list of what the gardener or farmer of today should do to prepare for spring planting, but I had to wonder how it might have changed over the years from what early populations have done and what might have been necessary for different crops grown by people in different agricultural surroundings.

The first thing I learned is that people have been spreading manure on their fields to help their crops grow for perhaps 8000 years. An archaeobotanist from the University of Oxford made a study in Europe, where farming spread to from the Near East about 8500 years ago. As a way of checking for the presence of manure in the remains from these extremely early times, she used the fact that manure contains a rare isotope of nitrogen, nitrogen-15, which is heavier than the more common N-14. Manured plants also show more N-15 than non-manured. By testing wheat, barley, peas and lentils from thirteen early farming sites – which dated between 7900 and 4400 years ago - they were able to prove the existence of manure use. The farming sites visited ranged from Greece to Bulgaria in the southeast and from the United Kingdom to Denmark in the northwest.

As to what might have led early farmers to think that laying down manure would help them to grow their food crops and fodder for their animals, Amy Bogaard, the archaeobotanist, made the very plausible suggestion that early farmers would note that where manure had been donated by animals, plants tended to grow and thrive.

Preparations by a family for spring gardening or farming were essential in any time up to the 20th century since the family would, most likely, have had to rely on what they could grow to nourish them through the rest of the year.

Lucius Junius Moderatus Columella, a Roman who lived from the year 4 to about 70 CE, wrote *De re rustica* in twelve volumes. He was a prominent writer on agriculture in his time whose works fell out of favor after he died. Fragments of the works were known in medieval times and the full translated books were discovered in monastery libraries during the Council of Constance, between 1414 and 1418. *De re rustica* was known by the 9th century in Europe and gives this charming quote on preparing grounds for farming:

> When swallows welcome the advent of spring, the farmer should feed the starving earth with rich soil or donkey dung or other manure; likewise, the gardener, bearing full baskets straining with the weight, should not hesitate to bring to newly plowed fallow ground whatever stuff the privy pit sends forth. Columella, *De Rei Rustica* I.x.79-85

Medieval farmers would have had another chore to accomplish before being ready to plant. First, they would have had to enclose the fields they wanted for crops or for a safe place for their animals to graze. This could be accomplished by putting in a dike, a fence, a hedge (or hedgerow) or a stone wall. Then they would plow or turn over the soil several times, first to break up the soil and the second to break down the heavy clumps that the first tilling would produce. Many times the farmer would also till the soil a third time. After that, fertilizing the soil and either digging up weeds before they developed seeds, or burying them to provide further green manure would be necessary.

Insights: Garden Prep Through the Ages

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Landnám, loot, and long-distance trade: understanding Viking economics
Jan 24, 2017 Ian Harvey

There were instances where the wrong sort of preparation and farming methods were used which, after a while, rendered the soil unusable or poorly prepared to nourish the seed planted. An example of this is a Viking farming practice called, in old Norse "landnám." The name has been roughly translated as "land take," or "new land settlement" and it was used successfully in Scandinavia.

Landnám involved keeping grazing livestock which would, in summer, be moved to pastures from May to September, then returned to individual farms for the winter months. Trees were cut down to create pastures and cropland and they also cut peat and drained bogs to provide water for animals and irrigation for crops. In Scandinavia, the methods worked very well.

However, the Vikings used the same practices in Iceland and Greenland when they came during the 9th and 10th centuries to establish farms on the islands. The soils on these two islands had come from volcanic eruptions, unlike Scandinavian farming soil. The soils were the size of silt, low in clay, had a high organic content and were more susceptible to erosion. When farmers removed the peat bogs on the Iceland and Greenland soil, the native plants, which were adapted to that soil, were reduced in number and gradually crowded out by other plants the farmers who brought them, intentionally or not.

It was the farmers' further misfortune to have been farming in soil not adapted to their methods during the onset of the Medieval Little Ice Age, which lasted, roughly, from AD 1100 to 1300. Even though they manured heavily during the first years, which helped the thin soil recover somewhat and even though the number and variety of livestock decreased because of the worsening conditions, farming ultimately failed. Measurements have been taken recently which show that in Iceland, at least 40% of the topsoil has been removed since the 9th century and 73% of Iceland has been affected by soil erosion.

Most people are familiar with the term "slash and burn" agriculture, also called "swidden". (Swidden: from English dialect, probably from Middle English **swiden*, *swithen*, past participle of Middle English *swithen* ["to burn, scorch, singe"], from Old Norse *svíða* ["to singe, burn"]). Its use is derided as are the farmers who use it. In fact, a writer with the United States National Library of Medicine, A. Terry Rambo, stated in an article that "Slash and burn farmers in southeast Asia are blamed for deforestation and are considered backward or ignorant." The article goes on to suggest, however, that there are some valid uses for it.

Preparation for slash and burn agriculture involves removal of trees or other vegetation which are burned. The result makes land available for farming in areas of higher elevation, with steep slopes, or heavily forested tropical areas, where the leached soil is very poor in nutrients. It has been used for thousands of years by those with no other options and, when population density is low enough (40 people for square kilometer was given). Since ten to twenty years allowed for regeneration of forests, slash and burn is not considered to degrade the environment in this low population density context.

However, after several years of slash and burn, the land devoted to farming is used up, becomes infertile and weeds gradually take over. Significant soil erosion, landslides, water contamination and dust clouds are likely because, without the root systems of vegetation and trees to hold the soil, heavy rains wash it away and dust storms blow it away during times of drought.

There are other systems in use since very early times which have produced far better results. One of these was in use by early inhabitants of the Amazon in pre-Columbian times. The soil in the heavily forested Amazon is very thin because nutrients are generally used up before they can settle on the ground. In rain forests, the trees tend to be very high and any nutrients from decomposing animal or vegetative matter are quickly used by other organisms before they can enrich the soil below.

The native people there improved the soil, accidentally or on purpose, by burning their agricultural waste in pits or trenches covered with soil so that the fire would be very slow and use as little oxygen as possible. This kind of fire produced a form of fine-grained charcoal rich in carbon which could endure in the soil for thousands of years. It is extremely porous which allows it to retain water and water-soluble nutrients. It may also serve as a habitat for the useful soil microorganisms that improve agricultural results.

Burning agricultural waste in pits is said to increase soil fertility in acid soils improving the quality of agriculture and may provide protection against some foliar and soil-borne diseases. European settlers found along with the poor soil, strips of black soil left by the ancient inhabitants which were very fertile, and they called it *terra preta de Indio*. In the late 20th Century it was given the name "bio char."

While the production of bio char releases some carbon dioxide into the atmosphere, one of its virtues is that it keeps the rest of its carbon content stable indefinitely and its use is considered effective in reducing carbon dioxide in the atmosphere. At the same time, it can improve water quality and soil fertility, benefiting agriculture.

Another ancient system of agriculture which fit local situations is Chinampa, or floating gardens and is in use where there are swamps and shallow lakes. The southwestern region of the Valley of Mexico, which includes the region of Xochimilco, was in ancient times called Chinampan. The process takes its name from the area.

In the Titicaca Lake region of Bolivia and Peru, the system was in use by 1000 BCE. It involves constructing narrow islands which are made of layers of vegetation, dirt and mud, 20' to 35' wide by 325' to 650' long and constructing a system of canals alongside these narrow fields. The lake or swampy area flowing past the islands provides water and fertilizer in the form of the organic waste in the water, thus irrigating and fertilizing the island's soil and allowing for very productive farming.

Chinampas farming is still being used in Xochimilco and, when one of the writers of this article was young, she took a boat ride through the chinampas of Xochimilco and saw the beautiful flowers that people on the islands were offering for sale to the tourists as they passed by. I was in the area many years ago and now wish that I had known more of what I was looking at that time.

As a final example, I should mention rice farming which, one source said, has been practiced in China for an estimated 10,000 years. I've found information on the subject for rice growing in China, Japan, and California. Methods used to achieve the rice paddies needed for rice culture are different over time and country. A recent article for growing rice in California shows how much has changed and yet is the same: "First, fields are carefully leveled with precision, GPS or laser-guided grading equipment. Level fields allow rice farmers to conserve water. Fertilizer is then added, and shallow furrows are rolled into the field. By April, the fields are ready to be planted." Growing rice has had certain requirements since earliest times.

Rice growing developed when Chinese civilization reached the lower Yangtze river where the climate was warm enough to support its growth. In warmer areas where the seasons were long enough, two crops were raised, one from March to June, the other from June to November.

Rice needs high levels of water which must be supplied either by naturally high rainfall or adequate irrigation. It may be grown in any frost free area with enough of a water supply. During the Zhou dynasty, (1046 to 256 BCE), rice was economically available only to the rich but by the time of the Han dynasty, (206 BCE to CE 220), it was available to everybody.

In preparing for growing rice, the first need was for a field that could be flooded to 5" or 6" in depth where the developing seedlings would be transplanted to do the bulk of their growing. Early farmers managed this by terracing the fields they were constructing, including in hilly or mountainous areas where the fields were apt to become narrow strips that followed the contour of the hills. The depth of water in the fields kept down the weeds which could not survive in water of that depth. Rice, fortunately, could survive in 5" to 6" water. By the time of the Song dynasty (CE 960 to 1279), foot powered pumps were in use to control irrigation.

The fields were plowed first. In some areas water buffalo were and are still used to plow the fields in spring, adding their useful manure to the soil, keeping it fertile. The seeds were started in fields with shallow water and, after about forty days, the seedlings were transferred to the paddy fields. In an ingenious addition, in some regions the farmer would add carp and goldfish to the flooded fields. The fish ate the insects infesting the fields and, when the rice was to be harvested, the fish could also be harvested, adding to the farmers' diet.

So, I guess when I'm looking ahead and planning for the warming weather, I'm joining a procession of thousands of years of people world-wide who have done the same. In all the various means of farming, from earliest times to today, what is most evident is that, for farmer or home gardener, preparation requires a lot of thought and hard work. And when our hopes are realized, what a beautiful result!◇◇◇

Master Gardeners, Tired of Zoom Classes?

Get Up to 3 Master Gardener Continuing Education hours by reading a book from:

REFERENCE AND READING RECOMMENDATIONS FOR A MASTER GARDENER BOOKSHELF

Prepared by George Graine, Emeritus Fairfax Master Gardener

Check it out here

heirloom tomatoes,
photo by Jason Alexander

SPOTLIGHT ON HEALTH:

HOW THE MEAT INDUSTRY IMPACTS CLIMATE CONTROL AND OUR HEALTH

Information compiled, assembled and shared by Grant West

Jeremy Rifkin states in *Beyond Beef, the Rise and Fall of the Cattle Culture*, "There are currently approximately 1.28 billion cattle populating the earth. They take up nearly 24% of the land mass of the planet and now consume nearly one third of the world's grain, enough grain to feed hundreds of millions of people. Their combined weight exceeds that of the human population on earth."

Industrialized beef is facing criticism from a growing body of leaders. The United Nations' Intergovernmental Panel on Climate Change is calling for humanity to eat less meat in order to help us save the planet. Every single person has the ability to influence the world for the better. While it might not seem like an incredibly significant part of your life, your diet actually has the power to literally save the world.

We depend on a healthy environment for our own survival. The huge abundance and variety of the natural world, called biodiversity, is essential for food, clean water and medicines. Excessive animal product consumption is responsible for 60% of all biodiversity loss, according to World Wide Fund for Nature (WWF). The rapid loss of biodiversity, largely driven by industrial farming, could be as big a threat to our existence as climate change.

According to the GAO, more plant species in the United States are eliminated or threatened by livestock grazing than by any other single factor. Of the five new plants placed on the national registry of endangered species in August and September 1989, three were victims of grazing. Cattle grazing has so diminished the carrying capacity of the western rangeland, many native birds have been greatly reduced in number or eliminated altogether. Perhaps the most disturbing impact of overgrazing on public land has been the marked reduction in the number of wild animals, elk, bighorn sheep, pronghorn and antelope have virtually disappeared from much of the western range. By clearing forests, destroying habitats and using toxic pesticides to grow animal food, the industrial meat industry is contributing to the extinction of thousands of species, many of which haven't even been discovered yet.

Then there's our water supply; some experts estimate that it takes more than 1,800 gallons of water to produce a pound of conventionally raised beef. In total, the livestock sector uses at least 8% of the world's clean, fresh water supply while polluting much of the rest. Nearly half the water consumed in the United States now goes to grow feed for cattle and other livestock. In California, where 42% of the irrigation water goes to produce feed grain or drinking water for cattle and other livestock, water tables have dropped so low that the earth itself is sinking under the vacuum.

Cattle feedlots have also become a dangerous source of organic pollutants, accounting for more than half the toxic organic pollutants found in fresh water. The average feedlot steer produces over 47 pounds of manure every twenty-four hours. The organic waste generated by a typical 10,000 head feedlot produces nearly 500,000 pounds of manure daily and is equivalent to the human waste generated in a city of 110,000 people. The nitrogen from the cattle waste is converted into ammonia and nitrates and leaches into ground and surface water, where it pollutes wells, rivers and streams contaminating drinking water and killing aquatic life.

Wildflower of the Year 2021 American Wisteria (*Wisteria frutescens*) from

The Virginia Native Plant Society

The Virginia Native Plant Society (VNPS), founded in 1982 as the Virginia Wildflower Preservation Society, is a nonprofit organization of individuals who share an interest in Virginia's native plants and habitats. The Society and its chapters seek to further the appreciation and conservation of this priceless heritage.

learn more here

Other Sources of Information

Documentaries of interest on this subject:

Forks Over Knives
PlantPure Nation
Food Matters
Food as Medicine
PLANEAT
The End of Meat,
Diet Fiction
Living the Change

I highly recommend watching the first two.

Books of interest on this subject:
Beyond Beef, the Rise and Fall of the Cattle Culture by Jeremy Rifkin

How Not to Die and *How Not to Diet* by Michael Greger, MD, FACLM

Eat to Live by Joel Fuhrman, MD

Whole - Rethinking the Science of Nutrition and *The China Study* by T. Colin Campbell, PhD

Food - What the Heck Should I Eat by Mark Hyman, MD

The End of Illness by David Agus, MD

Prevent and Reverse Heart Disease by Caldwell Esselstyn Jr., MD

The Plant Based Solution by Joel Kahn, MD

I highly recommend starting with *How Not to Die* and *How Not to Diet* for overall content and reading interest.

Additionally, industrial meat is the single biggest cause of deforestation globally. At least one-third of the world's arable land is used to raise livestock. And new areas are constantly being cleared through deforestation to make more room — most alarmingly in the precious and irreplaceable Amazon rainforest. In Brazil, farmers are deliberately setting forest fires to areas of the Amazon rainforest to clear space for cattle ranching and to grow industrial animal feed, like soya, for farms back in the United Kingdom. Between the deforestation that occurs to make space for grazing cattle and to grow crops that will become livestock feed, coupled with the emissions associated with the animals and actual running of facilities, the impact of the livestock sector cannot be overlooked. As meat and dairy consumption increases on a global scale, so does this impact.

Trees in the Amazon rainforest produce their own rainfall, which keeps the whole forest alive and healthy. If deforestation for things like industrial meat continues at the current rate, the Amazon could reach a 'tipping point', where it can no longer sustain itself as a rainforest. This would have a devastating impact on the people and animals who live in, or depend on, the forest directly. It could also lead to less rainfall, affecting drinking water and irrigation across large parts of South America; and changes to climate patterns in other parts of the world too.

The destructive impact of cattle extends well beyond the rain forests to include vast stretches of the world's rangeland. Cattle are now the major cause of desertification. Desertification is caused by overgrazing of livestock; over cultivation of the land; deforestation and improper irrigation techniques. Nearly 13 million square miles of the semiarid and arid land of the world, an area four times the size of the United States, is now classified as moderately desertified: land that has lost a quarter of its potential productivity. Not surprisingly, the regions most affected by desertification are all cattle-producing areas and include the western half of the United States, Central and South America, Australia and the sub-Saharan Africa.

Beef cattle production also contributes an enormous amount of greenhouse gas emissions, including methane, nitrous oxide, and carbon dioxide. A pound of beef is responsible for 100 times more greenhouse gas emissions than a pound of beans. Cattle are a huge source of methane gas; in fact, if they were a country, they would be the third-largest emitter of greenhouse gases! According to a UN Food and Agriculture Organization report, cows impact our global climate more than all of the world's cars, planes, trucks, trains, and ships combined. The United Nations Food and Agriculture Organization (FAO) estimates that livestock production is responsible for 14.5% of global greenhouse gas emissions, while other organizations like the Worldwatch Institute have estimated it could be much higher.

When forests are destroyed to produce industrial meat, it removes trees that pull carbon dioxide (CO_2) out of the air and when the trees are burned billions of tons of carbon dioxide are released into the atmosphere, accelerating global warming. The fallen trees are often left to rot on the forest floor or are burned, creating further emissions. Healthy trees are essential for absorbing carbon from the atmosphere. If we cut them down, they can no longer help us in the fight against climate change.

In addition to our environment there is the threat to our health. While millions of human beings go hungry for lack of adequate grain, millions more in the industrial world die from diseases caused by an excess of grain-fed animals, especially beef, in their diets. Americans, Europeans and increasingly the Japanese are gorging on grain-fed beef and dying from the diseases of affluence, i.e., heart attacks, cancer and diabetes.

Organizations like the American Heart Association and the National Cancer Institute are urging consumers to eat less (or no) red meat in order to help fight heart disease and cancer. Overall, meat naturally contains trans fats, is high in saturated fat and promotes the body's production of a compound called trimethylamine N-oxide (TMAO), which is linked to an increased risk of heart disease, type 2 diabetes and Alzheimer's disease. If that is not reason enough to reconsider eating meat, there is cancer. Red meat of all kinds, including grass-fed beef, is labeled a class 2A carcinogen by the World Health Organization, meaning that it's "cancer-causing" to humans.

As Americans have come to consume greater amounts of beef specked with the fat of rich cereal grains, they have become increasingly overweight. While many things contribute to weight gain, including an excess of sugar in the diet and an increasingly sedentary life-style made possible by high technology, the consumption of animal fat is among the most important contributing factors.

In a Kentucky legislative finding-of-fact, it was found that "Numerous scientific studies now confirm that a whole foods diet comprised primarily of vegetables, fruits, grains, legumes and nuts without added oil, sugar and salt is optimal for human health, not only preventing a broad range

Spring Surprise:

Bloodroot

(*Sanguinaria Canadensis*)

Did you find this spring ephemeral in your landscape? Look for it in deciduous woodlands throughout Virginia. And if you find it, don't collect it - habit destruction and collection threaten this beautiful herald of spring.

Learn more here

of diseases and illnesses, but also reversing some of the most dangerous chronic conditions. This finding is of the highest importance to the commonwealth of Kentucky because it communicates a truth that has the power to save lives."

The animal agriculture industry works really hard to make sure we keep buying more meat, eggs, and dairy, by hiding the cruelty associated with producing millions of pounds of animal product, so why would their transparency about the impact to climate change be any different?

The fact is, if we don't start to shift away from meat and dairy, we will never be able to reach the climate change mitigation goals that are necessary to preserve life as we know it. When you discover you can make sure an amazing, positive difference (to the planet and your health), just by eating more vegetables and grains and less meat and dairy ... why wouldn't you?

Acknowledgements of whole foods from esteemed experts in the field:

From Dr. Caldwell B. Esselstyn ... We need to get the word out across America .... It's unfortunate, but collectively, the media; the meat, oil, and dairy industries; most prominent chefs and cookbook authors; and our own government are not presenting accurate advice about the healthiest way to eat. Indeed, some people think a plant-based, whole-foods diet is extreme. Yet, half a million people a year will have their chests opened up and a vein taken from their leg and sewn onto their coronary artery. Some people would call that extreme. We have created a billion-dollar cardiology industry for a disease that doesn't even exist in half of the planet.

It is very clear that heart disease is a food-borne illness. I am delighted to serve on the Advisory Board of the nonprofit PlantPure Communities, which is working to bring healthy food and science-based nutrition to low-income and food-desert communities.

From Dr. James L. Marcum, FACC ... Most of the problems I encounter daily involve chronic diseases. Diabetes, obesity, hypertension, heart disease, sleep apnea, and mental health are widespread and their rates are increasing each year. Our current medical system treats symptoms and not causes. The health of our society is not improving and we cannot afford the never-ending costs.

All of our chronic health problems could be improved with better nutrition. We need more "real" food: fruits and vegetables. Studies have shown that a whole-food/plant-based diet can be used to treat and prevent chronic diseases.

From T. Colin Campbell, Ph.D. ... I can hardly think of an issue in medical practice or research during the past century where there was so much convincing and favorable research in health care that has not made its way into the public consciousness and professional practice, as that for the health benefits of the whole-food, plant-based diet. This information, as it is now stands, can rank up there as a fact of nature.

From Dr. Michael Greger ... The best available balance of evidence clearly shows conclusively that a whole-food, plant-based diet can prevent and in some cases reverse many of the diseases that kill most Americans every year. The science is so overwhelming that it is not unlike the 1964 situation that finally forced the Surgeon General to issue a report that linked smoking with cancer. How many more Americans will die before this information is shared with the American public? Clearly, we can't wait for the government to pass laws and regulations when so many special interests are at stake. That is why I am so thankful to work with Nelson Campbell and to be a part of the team of people he has put together to create a national grass-roots movement for evidence-based nutrition.◇◇◇

International Master Gardener College

REGISTRATION INFORMATION:

When: September 12-17, 2021

Where: Our easy-to use virtual conference platform, EventMobi

Who: Members of the public, Master Gardeners, and Extension specialists

Schedule: Check the schedule and our speakers page

Cost: Registration costs $150, with small additional fees for add-on workshops or T-shirts

Registration information: To go directly to the registration portal, **click here**. For detailed instructions on **how to register, click here**. If you encounter any issues during your registration, please contact the Virginia Tech Continuing and Professional Education (CPE) office at cpeinfo@vt.edu or (540) 231-5182.

click to view program

native plant black-eyed Susan (*Rudbeckia hirta*) attracts children as well as pollinators; Alexander Sigros Hammill selects the best blooms
photo by Jason Alexander

MASTER GARDENER PRINCE WILLIAM PLANT SALE: A NOTE TO MASTER GARDENERS

by Leslie Paulson, Master Gardener Volunteer

It's that time of the year again! As I write this, the weather is pretty nice but we all know that the month of March can be iffy in Virginia. As you all start working in your Gardens, would you please consider donating plants to our Spring Plant Sale?

A couple of guidelines: **plants cannot be on the invasive list**, and also, no Hostas or Liriope since they do not sell. If you are in doubt, please ask me.

Master Gardeners Prince William are included on the Native Plant Sales in Northern Virginia, so we need native plants to sell. Remember, all plants should be in at least a **gallon** size pot. If you have **extra gallon pots**, please bring them to the Teaching Garden. Please bring your plants out on either April 22nd, our evening workday from 5:00-7:00 p.m., or April 24th, a Saturday morning workday, from 9:00 - 11:30 a.m.

Our sale is over a week's time. It will start on Tuesday April 27th and go to the following Tuesday, May 4th. As we did last fall, patrons will contact the Horticulture Helpdesk at mastergardener@pwcgov.org for an appointment. Please give us 3 choices of times.

The more plants Master Gardeners donate, the more money we can raise. Natives really sell - we sold 90% of them last year.

We will also have a collection of used gardening books for sale. If you have gardening items you are thinking of donating, please run it by me first. Some things just don't sell as well as you might think.

Please let me know if you want to help with the sale. You can also check the box on your Recertification form.

Thank you,

-Leslie Paulson ljp6651@comcast.net.◇◇◇

What is a Master Gardener?

Virginia Cooperative Extension Master Gardeners (VCE-MG) are trained volunteer educators who provide the public with environmental information that draws on the horticultural research and experience of Virginia Polytechnic Institute and Virginia State University.

Join Us!

Information sessions held in August.

click here to learn more

Prince William Master Gardeners and Master Naturalists team up to make a difference photo by Nancy Berlin

IN THE COMMUNITY: A REFORESTATION PROJECT

reported by Nancy Berlin, Natural Resource Specialist/Master Gardener Coordinator

On March 10, 2021, Prince William Master Gardeners and Master Naturalists volunteered to remove 400 autumn olives (*Elaeagnus umbellate*) to give native trees more space and light to grow.

Autumn olives are ranked as a severe threat, meaning they are invasives that spread easily, replacing native plants and disrupting the local food web. For more on autumn olives and the importance of native plants see Virginia Tech publication 420-321 and Doug Tallamy's Homegrown National Park. ◇◇◇

photos by Nancy Berlin

COURTESY OF PLANT NOVA NATIVES: PLANTING IN POTS FOR EASY BUTTERFLY VIEWING

reprinted with encouragement from PLANTNOVANATIVES, March 5, 2021; thanks to Leslie Paulson, Master Gardener Volunteer

Some of us are deeply into gardening, but the rest of us are content with plopping a few flowers into a pot and calling it a day. This explains a lot of the popularity of annuals, most of which end up in containers and are switched out when they fade. Their colors brighten up our decks and balconies all summer, but their value in most cases is only visual. Native perennial flowers, by contrast, not only look beautiful but actually support butterflies and other life.

Most plants that are native to our area will overwinter in a pot, thus saving us the trouble of replanting year after year. Although none of them will bloom for the entire growing season, they provide interest as they develop. It is easy to get continuous color by planting several species that bloom at different times.

Once blooming begins, the parade of associated pollinators is fascinating. Being able to view the flowers up close on a deck or balcony reveals the variety of critters that you might not notice from afar, from tiny metallic-blue bees to the whole range of butterflies. There are four hundred species of native bees in Virginia, none of which will sting you as they forage for food. Butterflies range in size from the tiny Least Skipper to the classic Eastern Tiger Swallowtail. With luck, you may even see a Monarch Butterfly, especially if you plant any of a number of the several local milkweed species. The milkweed Butterfly Weed *(Asclepias tuberosa)* is particularly ornamental and just the right size for container gardening. Just as Monarch caterpillars require milkweed to survive, every other butterfly has its preferred host plant with which it evolved. This is why adopting locally native plants is so important. The annuals sold in garden centers are not native and thus do not help butterflies complete their life cycles.

Birds also enjoy native plants in containers, as much as they would if planted in a garden. The seeds of Black-eyed Susan and other Rudbeckias are particularly popular with goldfinches. Of course, you will only see them if you allow the seed heads to remain. The shapes and colors of the dead stalks of native plants add a lot of interest to an otherwise barren deck in winter. You can also draw in hummingbirds when you use the red-flowered plants such as Cardinal Flower *(Lobelia cardinalis)* that they prefer.

Shade is no obstacle to container gardening with native plants. Particularly pleasing is the native Bleeding Heart *(Dicentra eximia).* The lacy, slightly bluish foliage is beautiful by itself, and blooms keep coming from April to the first frost.

You can learn all about container gardening with native plants on the Plant NOVA Natives website. The soil used in containers is designed to have good drainage, which means you can start planting earlier in the spring than in the rest of the garden, where working the wet soil would lead to harmful compaction. ◇◇◇

Plant NOVA Natives is the joint marketing campaign of a grand coalition of non-profit, governmental, and private groups, all working to reverse the decline of native plants and wildlife in Northern Virginia.

Our strategy is to encourage residents as well as public and commercial entities to install native plants as the first step toward creating wildlife habitat and functioning ecosystems on their own properties.

All are welcome to participate in this collective action movement!

CONSERVATION AT HOME:
BIRD WINDOW COLLISIONS

by Jason Alexander, Master Gardener Volunteer

Glass windows are truly a remarkable human innovation and in terms of evolutionary history, a very new invention. In a short time, human ingenuity has come up with all kinds of advances in glass technology, so much so that most of us now carry a sheet of highly specialized glass in our pockets every day (think: smart phone).

Anyone who has ever walked into a glass door can understand that glass is not always highly reflective like a mirror. Sometimes it appears invisible, even to our highly evolved brains. So, it's easy to understand that a bird's brain might not have evolved to understand what glass is; they are after all bird-brained. Birds don't just hurt themselves, they can also crack the glass, and anybody who has had the pleasure of buying windows knows it can also break the bank.

Research suggests birds have not evolved to be able to understand glass. Depending on the light, birds may think they can pass through the glass if they can see through to outside, or they may see the reflection of a tree or themselves as a rival and fly into the glass unaware.

Conservation At Home: Bird Window Collisions

Sources

Seven Ways That Bird Collisions With Building Can Be Prevented;
Audubon Pennsylvania

Bird-Window Collisions;
Bird-Window Collision Working Group, Audubon Society of Northern Virginia (ASNV) webinar

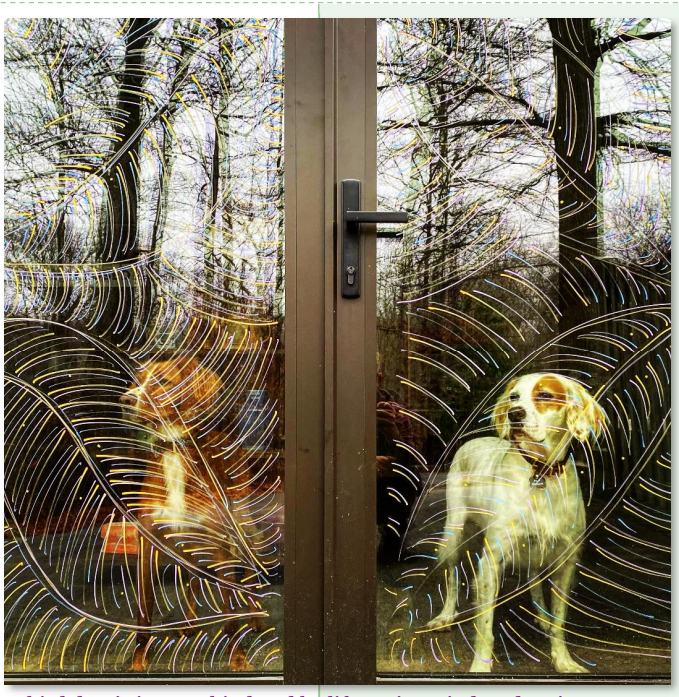
"Vertical lines should be spaced no more than 4" apart and horizontal lines no more than 2" apart."

After too many horrifying and deadly bird collisions at our home, my attempts to "bird proof" our windows began. Based on research, my first solution was to draw closely spaced vertical lines with soap. It worked well until the weather began to wash the soap off. The windows were smeared with soap after raining just a couple of times which left us with an unappealing result. After a few months, I thought it needed to be reapplied.

Before I could get to it though, we had another bird collision. I wanted to find something that was aesthetically more pleasing and didn't wash off so easily in the rain, yet would easily wipe off with a little window cleaner. I found a set of acrylic paint markers suitable for glass that made the task easy. Any solution is going to take some time, but if it were durable and didn't blur our view, it would be worth the effort. I'm happy to report that, it's been several months since I applied the acrylic paint, and we've had no bird collisions.

You can be creative. Draw a favorite holiday or seasonal design. Our resident birds haven't sent a thank you note by carrier pigeon yet, but I know they appreciate it.

***Note:* Vertical lines should be spaced no more than 4" apart and horizontal lines no more than 2" apart. I prefer curved lines so I space them no more than 2" apart in any direction.** ◇◇◇



bird dogs' view not hindered by life-saving window drawing; photo and window drawing by Jason Alexander

Prince William has a core group of trained Master Gardeners in the Audubon at Home program who have certified over 100 homes. To make more land in Prince William County wildlife-friendly, start to certify your property today. If you are ready to make your backyard or community space more environmentally friendly give us a call at 703-792-7747 or email master_gardener@pwcgov.org.

CRITTER NEIGHBORS:

EASTERN-EYED CLICK BEETLE (*ALAUS OCULATUS*)

by Jason Alexander, Master Gardener Volunteer

- The Click Beetle gets its name from the sound it makes when it flips itself right side up, flipping as high as six inches off the ground.
- Two large black dots on its back deter prey by suggesting they must be the eyes of a larger creature.
- The larvae "looks like a stocky, yellowish-brown, segmented worm. It has a flat, dark brown rectangular head that ends in 2 powerful jaws."
- Adults don't eat much. It is the larvae, known as "wireworms" that are voracious carnivores feasting on a variety of other pest insects living with them in decaying plant matter.
- Growing up to two inches long you're likely to spot these black, white and grey speckled beetles in deciduous forest from spring through fall.

photo by Jason Alexander

Sources:

InsectIdentification.org

Beneficials in the Garden, by Betty Gray, Galveston Master Gardeners

HORTICULTURE CLASSES OF SPECIAL NOTE:

Virginia Cooperative Extension

Virginia Tech • Virginia State University

Calling all Gardeners!

Virginia Master Gardeners Association Presents

Grow Your Own Food

A series of four virtual webinars on the principals of growing and preserving your own food. This series is designed for and available to beginning gardeners and Extension Master Gardeners wishing to improve their confidence in advising gardeners in their community.

SAVE THE DATE and watch for additional information for the next three sessions of **Grow Your Own Food**

Tuesday, May 11 at 6 pm, ***Diseases in the Vegetable Garden*** with Dr. Timothy Durham, Associate Professor at Ferrum College VA. Dr. Durham will discuss common diseases and their biology and sustainable management.

Tuesday, June 29 at 6 pm, ***Insect Pests in the Home Garden*** with Jon Traunfeld, University of Maryland. M.S. Agricultural Extension Education, University of Tennessee. Jon's program will focus on organic control of some of the most common pests in the vegetable garden, and he will have samples photos and scenarios for diagnosis.

Tuesday, September 21 at 6 pm, ***Preserving Your Bounty*** with Becky Gartner, B.S. Home Economics Education/ Extension, Virginia Tech; M.S. Human Nutrition and Foods, Virginia Tech. Becky will provide an overview of food preservation methods, from drying to pressure cooking, including the plusses and minuses of each.

If you are a person with a disability and desire any assistive devices, services, or other accommodation to participate in this activity, please contact Virginia Cooperative Extension at 703-792-6285 during business hours, 8 am and 5 pm, to discuss accommodations 5 days prior to the event.

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnie, Administrator, 1890 Extension Program, Virginia State University, Petersburg.

To Register and For More Information, visit Virginia Cooperative Extension Horticulture Classes at

https://www.pwcgov.org/government/dept/vce/Pages/Horticulture-Classes.aspx

Master Gardeners Prince William

Master Gardeners of Prince William (MGPW) is the supportive organization for active Master Gardener Volunteers in Prince William County, Manassas City and Manassas Park. There are approximately 200 active volunteer environmental educators serving in various capacities.

Volunteers and volunteerism are central to the MGPW mission as we strive to make our community a more sustainable, healthy and beautiful place to live and to educate residents about the many benefits of gardening, including the opportunity to grow nutritious, healthy food, environmentally friendly landscapes, all with the ultimate goal of protecting water quality in local waterways and the Chesapeake Bay.

FREE ONLINE CLASSES

Virginia Cooperative Extension (VCE) is hosting classes via zoom Wednesdays, 11:00 a.m. to Noon. For a schedule of classes, click here: Prince William County Cooperative Extension Horticulture Classes.

Please register for classes by contacting the Horticulture Help Desk at mastergardener@pwcgov.org or call 703-792-7747.

All classes as well as Teaching Garden tour videos can be found on our YouTube channel.

Although Prince William County Buildings are closed to the public, VCE staff and Master Gardener Volunteers are working remotely to answer your lawn and garden questions. Please contact us by emailing mastergardener@pwcgov.org or call 703-792-7747.

Help Support Master Gardeners Prince William, while you shop with:

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Master Gardeners Prince William

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-Send submissions, questions, or comments to MGPWnewsletter@gmail.com
The Editors,
Jason Alexander & Maria Stewart, Master Gardener Volunteers