THE DIRT

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NDSU | EXTENSION

Despite COVID
2021 promises new opportunities for the MG program

By Esther McGinnis, esther.mcginnis@ndsu.edu

Our newsletter editor suggested I write an article about coming attractions for the NDSU Extension Master Gardener Program. When I agreed to do it, I thought that would be an easy task and was envisioning an almost normal summer.

Within the span of a couple weeks, new developments are creating uncertainty.

We have new COVID-19 variants that are more contagious and potentially more dangerous. We are also seeing a slowdown in vaccinations. As a result, the only promise our program can make is that we will be flexible and respectful of your health.

Good News from 2020

Surprisingly, 2020 was a rather good year for the program. We trained 58 new interns and certified 18 new EMG volunteers. Although the volunteer hour requirement was suspended for 2020, EMG volunteers and interns submitted 11,869 volunteer hours. This number is just slightly down from 2019.

Many EMG volunteers and interns earned their volunteer hours by producing, gleaning or collecting fresh vegetables and fruits to benefit local food pantries and the unemployed. The program tracked 38,537 pounds of produce donated to food pantries. To top it off, the program certified 27 new home pollinator gardens totaling 169,439 square feet. The Extension Master Gardener Program continues to be a blessing for North Dakota.

Master Gardener Diagnosticians

We have a new crop of Master Gardener Diagnostician Interns who are just finishing their course. They had 18 hours of training in diagnosing plant problems caused by diseases, insects and environmental conditions. The next step is that MG Diagnosticians and Interns will be offered volunteer opportunities, such as answering questions through Ask Extension (our online question app), in outdoor plant clinics, and through their Extension agents.

Master Gardener volunteers and interns who haven't been through diagnostic training are welcome to participate in plant clinics but will feel more comfortable working with individuals who have diagnostic training. If all goes as planned, we hope to staff a booth at the State Fair in Minot.

The program has hired Kitty Torkelson part time to assist with the MG Diagnostician program. She is a current Ward County Extension Master Gardener and has a wealth of information from her time as a University of Minnesota Extension Master Gardener. Welcome Kitty!

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Social Media Opportunities for Master Gardener Interns

Due to the pandemic, we have not had the opportunity to mentor or to meet new interns. We are working on starting a Master Gardener Facebook page for spring and will be inviting interns to receive social media training and to regularly post science-based gardening information. This will be a great opportunity to volunteer remotely. As we develop this program, we will email interns on how to become involved.

Food Pantry Programs and Pollinator Gardens

Baker Garden and Gift in Fargo has donated their leftover vegetable seeds from 2020 to the Extension Master Gardener Program. We will

be distributing seed packets to county EMG Programs and also reimbursing costs for EMG food pantry gardens.

As for pollinator gardens, the planning is in the early stages but we might be encouraging the planting of bee lawns in parks and recreational areas.

Plant Identification Training

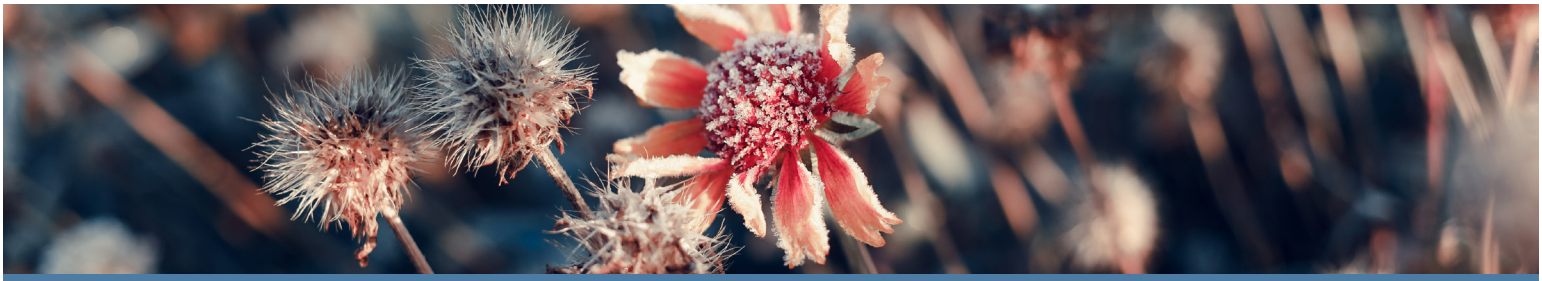
In late spring, the EMG Program will offer an online weekly plant identification course. This is the first time we are offering the course and it will focus on ornamental perennials and annuals with some related weeds. The course will be available to all Master Gardeners and to Extension Agents.

Volunteer Software

The NDSU EMG Program is one of the last programs in the country to do volunteer reporting on paper. We are investigating reporting software with the goal of signing a contract before the gardening season begins. However, any software contract will need to be approved by the Attorney General's Office and that could pose a delay.

SDSU Extension Master Gardener Program

We have a new relationship with the SDSU Extension Master Gardener Program. Aimee Ladonski is their volunteer development field specialist and she manages both the EMG Program as well as the AmeriCorp volunteers. Aimee and I are envisioning collaboration between our programs and continuing education opportunities that will be open to EMGs from both states.



What does the warm winter mean for trees, shrubs, perennials?

Proper prep in fall can make a difference

By Laura Kourajian, lkourajian@yahoo.com

While our winter is not over yet, most areas of North Dakota are experiencing a winter much warmer than normal with much less snow cover.

What does that mean for our trees, shrubs and perennials and fall-planted flowers, fruits and vegetables?

Well, it can mean a variety of things, according to three NDSU Extension specialists, but most of all, it shows the importance of properly preparing garden beds and young trees for winter last fall.

Mulching, mulching, mulching

The freeze-thaw cycles we've seen this winter, with temps in the 20s one day and near 50 the next, can create problems for plants, and mulching perennial flowers, fruits and vegetables can hold the cold in, preventing the thaw.

The mulch, said Tom Kalb, NDSU Extension horticulturist, keeps soil from experiencing temperature swings. "Insulation is the key word," he noted.

In most years, snow cover provides some of that insulation.

"Mulching in the fall might have helped protect from freezing and thaw cycles," said Esther McGinnis, another NDSU Extension horticulturist. "It doesn't hurt to mulch now, but the damage may already be done."

Frost heaving is one of the problems that can be caused by the freeze-thaw pattern. In frost heaving, those freeze-thaw cycles cause the soil to contract and expand. For plants with shallow root systems, that continued contracting and expanding can cause the root crown to be exposed and can break roots away from the main plant. This can seriously damage or destroy the plant. Perennial flowers susceptible to frost heaving are listed in Figure 1.

What about perennials, like irises, that may have been tricked into starting to grow back in November, when temps in the central part of the state hit the 50s?

"They could be stressed, for sure," McGinnis said. "I can't predict how it's going to go, but I certainly foresee the shoots will be damaged by winter, especially if there's no snow cover."

The key, again, is mulching.

"It has so many benefits, including protecting in years when there isn't much snow cover," she said. "So far, we've been pretty lucky (with temperatures). Once we get -10 and -20 and no snow cover, we're going to be seeing more damage that way."

For vegetables, Kalb said, "assuming they went into the winter not under stress, I think they're happy now."

Herbaceous perennials susceptible to frost heaving

- Pincushion Flower (*Scabiosa*)
- Coral Bells (*Heuchera*)
- Shasta Daisy (*Leucanthemum*)
- Blanket Flower (*Gaillardia*)
- Pigsqueak (*Bergenia*)
- Coreopsis (*Coreopsis*)
- Seathrift (*Armeria*)
- Whirling Butteflies (*Gaura*)
- Foamflower (*Tiarella*)
- Foamy Bells (*Heucherella*)
- Garden Mum (*Chrysanthemum*)
- Painted Daisy (*Tanacetum*)

Fig. 1 Information from Cindy Haynes, Iowa State University Extension and Outreach.

But, he noted, there's still a long winter ahead and we don't know where it's going.

Adnan Akyuz, the state climatologist, noted in his mid-January report, the February through April forecast shows North Dakota is under the influence of LaNiña's impact, which would mean cooler and wetter-than-average weather.

Those darn pests

The warmer-than-usual winter may mean more pests come summer, but less pest damage this winter.

Kalb said, "I think the bitter cold winter of North Dakota is our best defense against most pests. The mild temps, if this continues, we won't get as much pest control.

The best antidote to a potential pest problem? Kalb's advice: "Spend time in your garden. Scout for insects."

Joe Zeleznik, NDSU Extension forester, noted the mild winter may mean animals that resort to chewing on trees for sustenance may leave them alone as other food resources are more readily available.

Drought: Bad or good?

The drought conditions, which aren't being corrected by ample snowfall this winter, are more concerning.

"Snow melt can make a big difference in the spring," Kalb said. "But so can rain."

If the soil continues to be dry, it will warm up faster, which creates a greater risk of perennials breaking dormancy too early. Mulching now, Kalb noted, can still help stabilize the soil.

On the upside, drought, or more particularly the dryness of late summer, is good for helping trees harden up for winter, according Zeleznik.

He explained dormancy is a physiological process trees go through, partly triggered by shorter days, cooler temps and dryer conditions. If we have a wet fall, trees and shrubs will still be growing rather than preparing for winter when that first hard frost hits.

"Because it was so dry last summer, that helped with trees going dormant early unless you're watering like crazy and fertilizing like crazy," he said.

Chilling hours

All trees need a certain number of hours of chilling, usually defined as 45 degrees, to go dormant before they will respond to warmer temps in the spring and start growing. While we are probably not in danger of missing this mark in North Dakota this winter, Zeleznik said, there could be problems with blue spruce trees.

The blue spruce's chilling hours get met pretty easily, he said. Then, if we get 60-degree days in February or March, the blue spruce can break dormancy, and if the temps drop again, the tree isn't sufficiently hardened to prevent winter damage. To minimize winter injury, Zeleznik recommends watering blue spruce right up until freezing.

To mitigate the lack of snow cover, Zeleznik said homeowners can put mulch or an insulated blanket over the roots of trees, especially young trees, being careful not to place it up against the tree, which might encourage pests to take up residence and damage trees.

His advice to help trees through this unusual winter: "Wrap those trees, wrap those young trees. Lack of snow cover can cause problems with roots and die back. Where it's dry, add moisture, but not so much we're going to break dormancy. Just enough to make the soil moist.

"You can't change the weather," Zeleznik said. "You just need to make sure they go into winter as fully dormant as possible. Make sure they have a little bit of drought in late summer, then water later on."

Perhaps the best advice comes from Kalb.

"Just relax," he said. "Enjoy the winter. Be smart. Be prepared. And don't worry about what you can't control."

Tackling hydrophobic soils

By Martha Willand, marthawilland@hotmail.com

We've all had it happen at least once.

You're watering an indoor plant, and the water fails to go into the soil, and instead forms a small pond on the top of the soil, or seeps out along the edge of the pot and the soil and puddles out of the bottom of the plant, bypassing the roots all together (Fig. 1).

This occurrence often points to hydrophobic soils.

What are hydrophobic soils and why does it happen?

Hydrophobic soils repel water as opposed to absorbing it.

This can occur on many scales from indoor plants, lawns and gardens up to a landscape level. Primarily, it is thought to be caused by a coating of long-chained hydrophobic organic molecules on individual soil particles. This can result when small microorganisms within the soils decompose organic matter, reducing the larger particles to smaller, fine-textured particles with a waxy coating. Over time, this waxy coating acts as a rain coat for the soil.

It can also result from plants naturally possessing waxy compounds. As they decompose or are burned (i.e., forest fire), the waxy substances coat the soil particles. Over time, hydrophobic soils can inhibit plant growth and potentially kill vegetation, increase erosion and contaminate groundwater.

Potting mix used for container plants isn't soil; however, the peat moss component of a potting mix is naturally hydrophobic. If the potting mix dries out, it will resist wetting.

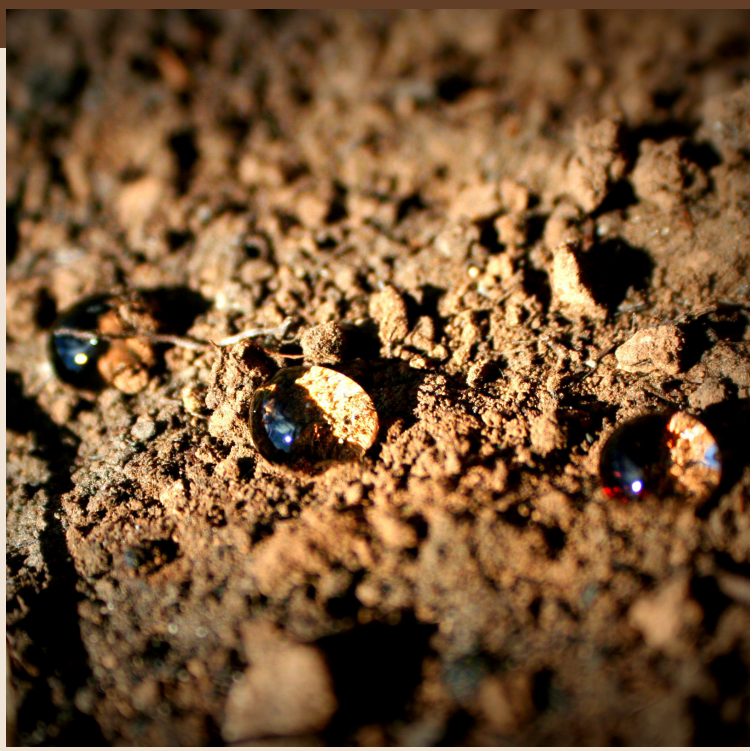


Fig. 1 Water droplets stay on top of the soil and won't soak in when soil is hydrophobic.

Signs and symptoms:

- Wilting plants despite repeated watering or rain.
- The soil is extremely dry, and you are not able to penetrate your fingers to a depth of two inches.
- Patchy growth – only portions of a potted plant appear to be growing, or irregular growth of grasses, crops and other plants.
- Irregular seed germination is another indicator of hydrophobic soils. This is particularly noticeable where you have spread a lot of seed and some patches fail to germinate.
- Water ponds on the surface of the soil for a significant amount of time.
- Small water droplets are coated in soil particles on top of the soil.

Treating hydrophobic soils in potted plants

- If you have a potted plant in need of immediate help, and it is light enough that you can pick it up, you can try soaking the pot. Fill a bucket or sink with enough water to cover the pot. Gently lower the pot into the water. Initially, the pot will float since there is so much air in the soil and root ball. The pot may start to absorb water and sink on its own. If it doesn't, you can gently push the entire pot underwater. Once the air bubbles cease, remove the pot at once to avoid killing beneficial microbes.
- For larger pots, set the pot in a shallow container of water to absorb water through the bottom. It may take an hour or more to thoroughly re-wet the soil. Be careful not to leave pots soaking in standing water continuously. Check them after an hour or two and remove them when they are hydrated.
- During warmer months, one can also trickle water slowly into a pot until the water is absorbed. If rain is in the forecast, a long, gentle rain may be all that is needed to revive dry, potted plants (Fig. 2.).
- For a longer lasting solution, repot plants with moist potting soil if possible. If your potting mix has become dry, apply a wetting agent when repotting (see below).

Soil wetting agents

Wetting agents are surfactants, just like detergents/soaps and emulsifiers. Soil wetting agents are hydrophilic (water loving), and increase the water holding capacity of the soil. They are commonly added to potting soil mixes, within greenhouse planting substrates and are routinely used in turf management.

They can be organic or inorganic, can feed on microbes in the soil, and can be liquid or granular. All wetting agents will eventually break down over time by soil microorganisms, so great consideration should be given when applied on a large scale as they can interfere with aquatic organisms through run-off.

A couple of organic wetting agents include yucca and agar-based products. Yucca is high in saponins, a natural wetting agent. Saponins are steroidal-based natural chemicals that break down the polarity of the water molecule, actually making water wetter and allowing for higher rates of absorption.

Agar is a seaweed-based product often used as a food thickener. It is also commonly used as a soil wetting agent by organic farmers. You can make your own application by dissolving 1 cup of agar paste in one gallon of warm water, and stir until a slurry is formed. Apply to hydrophobic soil with a water can.

Fig. 2 Outdoors, a light rain or a trickle of water can help moisture penetrate hydrophobic soils.

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Supporting our North Dakota zoos

By Cathy Ruebel, foxtail2400@gmail.com

Last year was a remarkable year for North Dakota gardeners, both seasoned planters and those new to home food production.

NDSU Extension Master Gardeners, local clubs and individuals donated more than 38,000 pounds of fresh, straight-from the-garden produce to pantries to help alleviate food insecurity around the state. That is an amazing accomplishment, and 2021 can be even better.

Did you know fresh produce from your garden is also most welcome by the zoos in North Dakota, as well? (Fig. 1) As you strategize your spring plantings, consider adding another row for your local zoo.

"We love having fresh, nutritious produce for our animals," said Chahinkapa Zoo horticulturist Joan Zettel, a master gardener from Wahpeton. "About five years ago, we started a zoo garden within the zoo. We use it to grow produce for the animals, but also to teach kids about gardening. Last summer, our Little Sprouts class was even excited to taste dehydrated kale chips."

"Our primates loved banana peppers from the garden," she continued. "Our garden is small, so we could definitely use donations from other gardens."

"Thank you for thinking of us," said Jennifer Kleen, executive director of Greater Minot Zoological Society. "There's such a variety of animals and tastes, we can find someone to match almost any kind of produce." (Fig 2) Greens of all sorts - kale and cabbage are staples, all the way to green beans for treats. Sweet potatoes are most welcome, as are melons, pumpkins, gourds, strawberries, tomatoes, even onions." (Fig. 3)

"Tree browse are always a big one, too," she said. Branches trimmed from green ash, cottonwood and willow can be packaged and frozen for many critters through the winter. (Fig. 4)

Kleen offered a challenge to a local gardener for the Roosevelt Park Zoo: "Our bears do a pumpkin smash for Halloween - the bigger the better. It would be a fun partnership to get periodic pictures and watch it grow." (Fig. 5)

Roosevelt Zoo has a browse garden with tasty favorites not quite out of reach of some of the animals. (Fig. 6) Dakota Zoo Assistant Director Allison Malkowski noted that herbs and even cut flowers, such as roses, carnations and hibiscus, can be used as enrichment treats. (Fig. 7)

The chart of fresh produce used by the zoos reads like any of the mail order seed catalogs. Maybe there's a variety of seed you always wanted to try? If you have a vegetable, fruit or herb not listed in the chart below, call your local zoo and they will check with the zoo nutritionist or veterinarian to make sure they can use it.

Donations are accepted year around at the state's zoos – please call your local zoo ahead of time so they can plan for it.

Produce should be pesticide free and in generally good condition (not rotting) – it doesn't have to be washed – just brush away the dirt clumps. Leave the greens on root vegetables, such as carrots and beets. The zoos get large donations of apples in autumn from the public, so be sure to call ahead before donating apples.

Fig. 1 Laura, the prairie dog, enjoying a carrot. (Photo courtesy of Roosevelt Park Zoo.)

Fig.2 A Bactrian camel at the Dakota Zoo. (Photo by Cathy Ruebel.)

Fig. 3 Ring-tailed lemurs Sullivan and Shaemus love strawberries. (Photo courtesy of Roosevelt Park Zoo.)

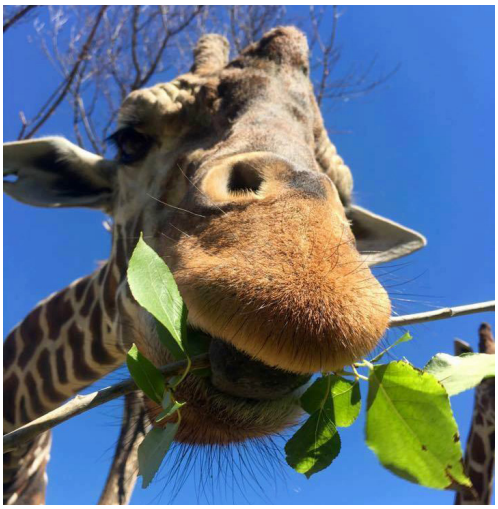

Fig. 4 Mashama, the giraffe, noshing on a tree branch. (Photo courtesy of Roosevelt Park Zoo.)

Fig. 5 George the Red Panda. (Photo courtesy of Roosevelt Park Zoo.)

Fig. 6 Akili the okapi reaches for greens in the Roosevelt Park Zoo's edible garden. (Photo courtesy of Roosevelt Park Zoo.)

Fig. 7 Bodie, the bobcat, enjoying some catnip. (Photo courtesy of Roosevelt Park Zoo.)

NORTH DAKOTA ZOOS CONTACT INFORMATION

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PRODUCE USED IN NORTH DAKOTA ZOOS

- Asparagus
- Banana Peppers
- Beets *
- Berries (any)
- Broccoli
- Brussel Sprouts
- Cabbage
- Carrots *
- Cat grass
- Cat mint/catnip
- Cauliflower
- Celery
- Cilantro
- Corn
- Cucumber *
- Flowers (roses, carnations, hibiscus) **
- Gourds
- Grapes
- Green beans *
- Herbs (basil, parsley, thyme, etc.) **
- Lettuce varieties (green leaf, red leaf, romaine, kale, collard greens, spinach) *
- Melons (any)
- Okra
- Onions
- Parlsey
- Pears
- Peas *
- Peppers (not hot, green, red, yellow)
- Plums
- Potatoes
- Pumpkins
- Spinach
- Squash (any)
- Strawberries
- Sweet potatoes *
- Tomatoes *
- Tree Browse (green ash, cottonwood, willow)
- Yams *

** Used in most diets - higher need*
*** Enrichment item for some animals*

Botanical DICTIONARY REFRESHER

By Lila Hlebichuk, lilahl@yahoo.com

Deciduous: "Falling off at maturity" and "tending to fall off," in reference to trees and shrubs that seasonally shed leaves, usually in the autumn; to the shedding of petals, after flowering, and to the shedding of ripe fruit. Trees transfer water and sap from the roots to the leaves through their vascular cells, but in some trees as autumn begins, the veins carrying the sap slowly close until a layer of cells called the abscission layer completely close off the vein allowing the tree to rid itself of the leaf.

Deciduous conifer: A tree that bears cones and sheds its needles in the winter. Examples include the American larch (*larix* spp.) (Fig. 1 and Fig. 2), bald cypress (*Taxodium distichum*) and dawn redwood (*Metasequoia glyptostroboides*).

Fig. 1

Fig. 2

Abscission: The shedding of various parts of an organism such as a plant dropping a leaf, fruit, flower, or seed.

Marcescence: The retention of dead plant organs that normally are shed such as in oak, beech, and hornbeam.

Denudate: A deciduous tree with leaf loss (normal seasonal or through defoliants).

Aphyllous tree: A bare tree.

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GROWING GREEN

Houseplants hand out a whole lot of benefits

By Esther E. McGinnis, esther.mcginnis@ndsu.edu

In the winter evenings, my family and I stay in our small sitting room surrounded by houseplants.

Thanksgiving cactus, snake plant, ivy, fiddle leaf fig, calatheas and Chinese evergreen adorn the room.

The downstairs family room is much nicer with a bigger TV and a fireplace. However, something about the tropical jungle vibes attracts us to the small sitting room. Science shows why my family and I are drawn to this cozy area.

Research shows that houseplants can play a role in health and wellness. Studies show that viewing common houseplants can make us feel more relaxed physically and psychologically.

The exact mechanism isn't understood, but we possibly feel connected to nature by seeing plants indoors. This can be a great restorative benefit for individuals who live in cold, snowy climates.

Plants can make our homes feel more comfortable during winter when the furnace dries the air. Placing several large plants in a small room can raise the humidity to more comfortable levels.

Houseplants can affect our perceptions of a room and make it seem more comfortable, fresh and clean.

These effects extend to the classroom. A study from a junior high school in Taiwan shows students perceive a classroom with multiple houseplants to be more welcoming. Even more amazingly, the same study documented fewer instances of student punishment for misbehavior and absences on account of illness.

Unfortunately, plants in the classroom did not increase test scores.

At the college level, instructor evaluations were higher in plant-filled classrooms. College students rated the classes as stimulating and reported their interest in the subject matter increased.

On a positive note, the students scored the instructor higher for enthusiasm and clearness of instruction. The effects of houseplants on evaluations were most noticeable for college classes taught in rooms that lacked windows.

In the workplace, placing houseplants in a windowless room can increase productivity, lower blood pressure and increase concentration on computer tasks.

Fig. 1 Calatheas have attractive foliage and like low-light environments. (Photo courtesy of Esther McGinnis.)

Another study documented lower levels of fatigue in workplace environments that incorporate plants.

Research projects that study the effect of plants on hospital patients are most impressive. Two studies from 2008 and 2009 evaluated the effects of multiple foliage plants and flowers on patients recovering from appendectomies and thyroid surgery. Both types of surgeries have a standard protocol that made comparison easier between the group of patients who received eight to 12 small plants versus the control group, who received no plants.

In reviewing patient records, the researchers in both studies found the surgical patients recovered faster in the presence of plants. These patients also took fewer and milder pain relievers, reported less pain and fatigue and were shown to have lower blood pressure.

These initial studies show indoor plants can have a profound effect on our health and mental well-being in specific circumstances. The one thing we can count on is that more research will be conducted in this interesting area in the future.

In the meantime, try an experiment of your own by incorporating houseplants into your interior environment.

Japanese Gardens

Honoring the divinity in nature, many are designed for meditation

Fig. 1 One of the most visited paradise garden temples, Kinkaku-ji, features a shining gold pavilion. (Photo courtesy of Wikimedia Commons, licensed under Creative Commons Atribution Share Alike 3.0 Unported license.)

by Anne Blankenship, anne.blankenship@ndsu.edu

Exoticized by Westerners and deployed by the Japanese for diplomatic purposes at World's Fairs and sister cities around the globe, Japanese gardens are now one of the most recognizable styles of pleasure gardens. Inspired by Buddhist monks traveling from China, the Japanese added their unique contributions in the 12th century. The characteristics we associate with Japanese gardens all originated at Buddhist temples and monasteries.

Japanese gardens also take inspiration from Shinto, an amalgamation of folk practices and modern conceptions that honor the divinity within nature. Shinto mythology imbues the land and its natural resources with divine purpose. This reverence of nature is reflected in Buddhism as well.

Dry landscape gardens typify the simple aesthetic and impermanence central to Zen Buddhism. Most often, the gardens contain nothing but white gravel surrounding small groups of rocks. Once monks or novices rake the gravel into patterns, the stones resemble islands sitting amidst a swirling sea or mountains towering over plains. The act of raking the gravel is a form of meditation, and many people feel inspired to contemplate life or nothingness as they gaze upon the still scene.

The most famous dry landscape garden is found at the Ryōan-ji, a 15th century Zen temple in Kyoto.

The gardens surrounding temples feature meticulously pruned maple or pine trees. A central water feature will likely hold koi fish, turtles, lotus plants and small islands linked to the shore with bridges. Since the objective of a meditation garden is clearing one's mind, distracting colors are reserved for specific seasons. Red maple leaves in fall and pink cherry blossoms in spring teach a lesson about the universe's constant changes.

The gardens require continual care to maintain their characteristic perfection. Cultivating the plants, like raking the gravel, is part of a novice's training to become a monk. They hone their minds to focus on the particular task at hand and clear other thoughts from entering.

While perfecting this mental state takes years of practice, anyone can practice such meditation in their own North Dakota gardens to bring peace of mind. For Zen Buddhists, meditation can lead to enlightenment, a true understanding of the universe and one's place in it.

In contrast, Pure Land Buddhists believe they will enter a paradise after death and reach enlightenment from there. Pure Land temples thus feature paradise-like strolling gardens with a regal pavilion reflected in a central water feature, replicating what adherents believe exists in the pure land.

One of the most visited paradise gardens, Kinkaku-ji, features a shining gold pavilion (Fig. 1). Over the centuries, Buddhist temples changed affiliation, so many have both types of gardens.

Modern Japanese gardens are still influenced by these religious roots but increasingly mix styles and integrate local plant life.

The first permanent Japanese garden in the United States arrived with San Francisco's World's Fair in 1894. Following the attack on Pearl Harbor, however, it and other gardens in the U.S. adopted new names to hide their Japanese origins.

The caretakers of the garden in Golden Gate Park, the third generation of the Hagiwara family that designed the garden and lived on site, were removed from their home and incarcerated first in horse stalls at the Tanforan Racetrack and then at a camp in the Utah desert. Similar stories played out along the coast for 120,000 people of

Japanese descent, the majority U.S. citizens, due to racial prejudice and war hysteria. Those innocents brought the art of Japanese gardens with them to the country's interior.

In Seattle, Yasusuke Kogita had tenderly wrapped tree saplings in cloth and packed them in tin cans for the two-day bus ride to Idaho's Minidoka incarceration center.

Alongside tar-paper barracks, Kogita and others pruned sagebrush and convinced government officials to haul boulders to their housing blocks to build Japanese-style gardens (Fig. 2). The creation, maintenance, and enjoyment of gardens allowed Japanese Americans in every camp to enhance their physical environment, assert the cultural heritage for which they were imprisoned, and improve their mental well-being.

Kogita would sit in the garden for hours, arising on occasion to turn or shift a rock slightly. In 1945, he hired a trucking company to move each small stone and boulder (the largest weighing two tons) from his camp barrack to Seattle, where they now reside in his son Paul's garden. Reconstructed gardens at former camp sites underscore their importance for former incarcerees.

You can visit Japanese gardens throughout the country or make one in your own backyard.

The Northern Plains Botanical Garden is planning a Japanese garden in Fargo.

Fig. 2 Citizens of Japanese descent who were incarcerated in Minidoka incarceration center in Idaho during World War II built their own garden, which was later moved to Seattle. (Photo courtesy of Densho Digital Repository, licensed under (Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License).

Telltale water stains

Removing, fading them can be a DIY project

By Laura Kourajian, LKourajian@yahoo.com

I doubt I am the only plant lover with water-stained woodwork – dark stains that perfectly mimic the round bottom of a plant pot, the wedges of a plastic protective tray and the white-rimmed spatters of ancient dried water droplets. Not only are these stains unslightly, but they taunt me about my penchant for overwatering plants.

Hunkering down during the pandemic gave me the opportunity to figure out if I could remedy this situation, get rid of the stains and live happily ever after in our family room. There is an oak ledge that rims three outside walls, marking the top of the foundation, in this garden-level room. There are two windows, one east-facing and one north-facing, and the oak ledge makes a perfect spot to set plants where they'll get natural light.

Goggle, Pinterest, the local hardware store and lots of elbow (and shoulder) grease gave me the resources I needed to get rid of or fade these stains.

To start, I sanded the finish from the ledge, all the way around the room. Sanding at near-shoulder height was physically taxing, but the results were encouraging. I wasn't concerned about removing the stain, only the finish, exposing the water stains so the oxalic acid would be able to go to work doing its bleaching work.

Fig. 1 This area in front of the window shows evidence of black water stains from potted plants. The stain on the left shows the wedge outlines of a plastic protective tray.

Oxalic acid is very strong chemical available in granular form at most hardware stores. It is mixed with hot water and spread over the stained area. In my case, I mixed only a small amount and used a foam brush to apply it liberally to the stained area. The instructions on the oxalic acid are adamant about wearing gloves, safety goggles and protective clothing to avoid skin burns.

After wiping and rinsing three times, per instructions, the acid had lightened the stains but they were still noticeable and ugly. The instructions indicated a second application might be necessary, so I went with Round 2. Again, the stains were lightened, but except for the light droplet stains, they didn't disappear.

Fig. 2 The materials needed to remove or diminish the water stains included a stainless steel scrubber, Bar Keepers Friend cleanser and oxalic acid.

So, I did more reading. On Pinterest, I found several champions of using Bar Keepers Friend, that gritty cleaning powder kept on standby in the dark recesses under many kitchen sinks. Apparently Bar Keepers Friend contains a small amount of oxalic acid, so works to lighten and remove stains.

I bought a can of Bar Keepers Friend (found it at my nearby Runnings after striking out at the grocery store), mixed up a paste and used a wooden craft stick to spread it on the darkest parts of the stains. Once it had dried, which took several hours, I used a plastic putty knife to scrape it from the wood.

There were traces of the white paste embedded in the grain of the woodwork. Pinterest offered several suggestions for getting rid of these, including sanding with ordinary sand paper, scrubbing with steel wool and scrubbing with a stainless steel scrubber. (One site warned of using steel wool, noting the shavings from the steel wool are hard to clean away and if left on the surface and sealed into the wood, they would eventually oxidize and create the black stains like the ones I am trying to remove.)

I used the stainless steel scrubber, and it worked beautifully. It quite literally scrubbed the embedded paste from the wood grain and, in a wonderfully surprising bonus, it scrubbed much of the remaining dark stains from the woodwork. (I threw away the scrubber when I was finished; it should not be used for cleaning pots and pans after being used for removing stains from wood.)

Once I had removed as much of the stains as I felt I was going to get, I restained the wood and coated it with three coats of water-based polycrylic, following the instructions on the

Fig. 3 Oxalic acid solution was applied to the stain with a foam brush. The solution was applied twice and resulted in lighter, but still visible, stains.

cans. Polyurethane also would have worked well as a finishing coat, but it is oil based and has a much stronger odor, which I was trying to avoid in the closed house in the winter.

The pictures tell the story. The stained wedges shaped to the bottom of the plastic protective tray are nearly unnoticeable. If you didn't know they were there, you'd never be able to tell. The round pot-shaped dark stain next to it proved a little more formidable and while the traces of the stain are still visible, I'm happy with how much of the stain disappeared.

I've removed all the potted plants from the ledge, and while I anticipate I'll have to use the ledge again in the future, since the window is a good source of natural light, I will place

Fig. 4 In a second attempt to remove the stains, a paste of water and Bar Keepers Friend was spread over the stains and left to dry.

Fig. 5 The finished results show the wedge stains from the plastic tray are almost invisible, while the adjacent black stain has been diminished significantly.

them on a small rack on top of the ledge to keep them from sitting directly on my newly refinished woodwork.

National Initiative for Consumer Horticulture Group aims to lobby to more funding for consumer gardening research

By Esther E. McGinnis, esther.mcginnis@ndsu.edu

Extension faculty, area specialists, and agents are charged with the duty to provide science-based recommendations to stakeholders and the public. Would it surprise you to learn that many aspects of edible gardening and ornamental landscaping have not been thoroughly researched?

Treating iron chlorosis in susceptible ornamental trees is one example. Peer-reviewed research studies comparing treatment methods for landscape trees are scarce or non-existent. Another area that comes to mind is what is the optimal soil blend for raised garden beds. Everybody has a different opinion on this question. Lots of research and knowledge gaps exist for horticultural questions.

You may be asking why such basic but important questions have not been answered. The answer is very little research funding is available for issues that affect home gardeners. Federal research funding has only recently become available (within the last decade) for commercial horticulture issues, i.e. research issues that affect commercial producers of vegetables, fruits and ornamental plants.

Unfortunately, funding to conduct research that intentionally benefits consumers and home gardeners has not been a priority. To make matters worse, the number of consumer horticulture faculty and personnel has been shrinking.

The National Initiative for Consumer Horticulture (NICH) was established in 2015 by Ellen Bauske from the University of Georgia to create a broad coalition of university faculty, extension personnel, public garden employees, and green industry businesses to lobby for increased consumer horticulture support and research funding.

Admittedly, NICH has got a lot of work ahead of it.

Before NICH can persuasively lobby for funding for consumer horticulture research, it must make the case that edible and ornamental home gardening is valuable to society at large in terms of physical and psychological benefits, improved nutrition, environmental services and economic impacts in the United States. Gardeners intuitively know about the benefits of gardening but it is still so impressive to see the importance of plants to society as explained through a series of infographics on the NICH webpage: https://consumerhort.org/plantsdothat-3/

Hopefully, the rise in gardening during the pandemic will help NICH's cause to promote consumer horticulture as a valuable discipline worthy of research and personnel.

#PlantsDoThat For Cities and Suburbs!

Urban gardens and landscape plantings improve livability by benefitting environmental and public health

Keep Cool in the City

Street trees in cities and suburbs can help reduce ambient temperatures in a neighborhood by as much as 5.5°F.[1]

Cleaner Water

Plants growing in a raingarden or bioswale reduce nutrient pollution into watersheds by as much as 13-15 pounds of pollutants, per year.[4]

Cleaner Air

Urban street trees help to lower air pollutants, such as ozone, in a city.[5]

Run-Off Reducers

Plants growing in raised beds in New York City help slow the flow of 12 million gallons of stormwater, annually.[2]

Bee Boosters

Densely populated cities can benefit bees, as long as neighborhoods in that city have lots of gardens and garden plants.[6]

Flood Fighters

Raingardens reduce stormwater surges, and prevent flooding, by retaining up to 75% of stormwater surge after a heavy rain event.[3]

Native Trees Sustain Native Birds

Native trees in residential yards help sustain native bird populations in metropolitan areas.[7]

This infographic was produced by the NICH Environmental Committee: Amy Jo Detweiler, Gail Langellotto, Carl Evensen, Allison Gault, Sarada Krishnan, Julie Weisenhorn, Sabrena Schweyer, Lauren Garcia Chance. Design provided by the Horticultural Research Institute.

[1]Wang et al. 2018. Cooling effect of urban trees on the built environment of the contiguous United States. Earth's Future 6: 1066-1081

[2]Gittleman et al. 2017. Estimating stormwater runoff for community gardens in New York City. Urban Ecosystems 20: 129-139.

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Find this infographic and others at consumerhort.org

NICH
NATIONAL INITIATIVE FOR CONSUMER HORTICULTURE

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Have a story idea?

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