THE REAL DIRT

Master Gardener Association of Northwest Michigan

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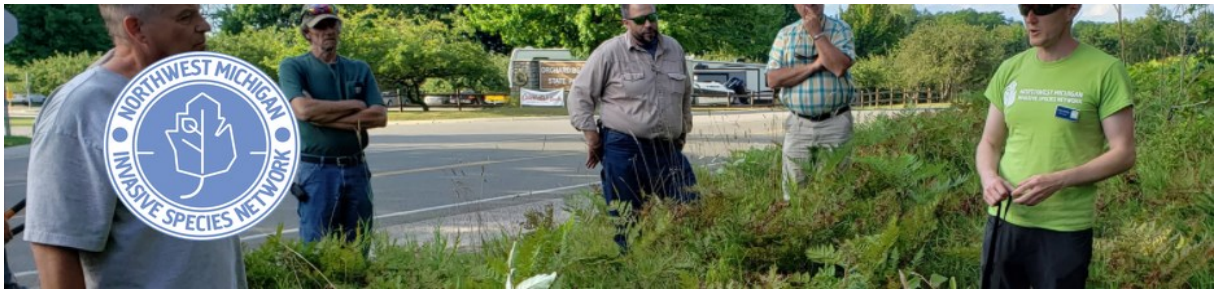
Wildflower Association of Michigan

Homemade Weed Control - What works well (and is safe!) and what should be avoided

Author: Katie Grzesiak, Invasive Species Network Coordinator, 2/18/2021 (printed with Katie's permission)



At ISN we get a lot of questions about "homemade" alternatives to traditional herbicides, including Epsom salts, table salt, vinegar, and hammering copper nails into trees. This article is a more in-depth exploration of these methods, including references.

First, it's important to define an herbicide as anything applied to a plant to kill, defoliate, or otherwise impede its growth. An herbicide can be a glyphosate product or other "traditional" herbicide or an organic herbicide like copper sulfate; home remedies also become herbicides when they're applied to plants! It's also important to note that anything being used as an herbicide has a potential to be hazardous to humans in some way, whether it's a short-term hazard (like a physical or chemical burn on the skin) or more long-term. Caution is important, including wearing appropriate personal protective equipment (PPE) and storing safely.

Second, herbicides are just one tool in the invasive species management toolbox. Many invasive species can be controlled by physical and/or mechanical means, and others have biological enemies to help keep them in check. If you'd like assistance in choosing the method that's right for you, please contact us! We'd be happy to help you choose between the available options, which vary by species, site, budget, and time available.

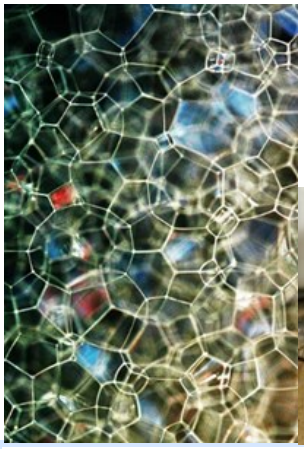


Photo courtesy of Heatweed Technologies

Epsom salts (MgSO4) have historically been used as fertilizer; in theory, you could apply them at such high concentrations that they kill plants, but it would take a lot, and could damage soils long-term. ISN does not recommend using Epsom salt as an herbicide.

Copper nails driven into an undesirable tree's trunk are an often-told home remedy. However, while copper can absolutely be toxic (it's a main ingredient in several herbicides, particularly those used in organic settings), you'd need to use a LOT of them to get enough copper in the tree's system to cause harm, at which point you'd be close to girdling the tree (which would kill many non-suckering trees any-

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way). Additionally, copper nails are expensive! If you're thinking about copper nails and want to avoid traditional herbicides, you may want to consider girdling or just cutting down the tree or shrub instead. ISN does not recommend using copper nails as an herbicide.

Table salt (NaCl) will definitely kill plants—salt is very toxic! However, it will also kill the next thing you plant in that spot… and possibly the one after that, and after that. It can permanently damage the soil; there's an old tradition about "salting the earth" (not to be confused with "salt of the earth") after defeating an enemy, and it's quite a potent curse! If you were considering using table salt on a cut stem or stump, you may want to consider traditional herbicide or horticultural vinegar instead. ISN does not recommend using table salt—or any other salt, like rock salt—as an herbicide.

Boiling water has been used very successfully to kill plants in a variety of settings, as the heat ruptures cells and kills the tissues. Just pouring it out of the kettle onto the offending weed can work well, provided the weed is small enough to be affected (a great way to take care of weeds in sidewalk cracks, for example). However, for hardier weeds with deep roots or even just larger plants, this may not be enough. Several companies have created ways to inject heated water into roots, spray it out over an area, or otherwise target undesirable species. (See photo for an example of Heatweed Technologies using this method to treat species like giant hogweed and Japanese knotweed.) This can be very effective, though, safety for the applicator as well as any nearby plants must be considered. Of course, as soon as the water cools down a bit, it's just regular water and harmless (but also ineffective for plant control). ISN recommends using boiling water in situations where contact-kill is acceptable, or where proper machinery is used to deliver the desired result.

Vinegar (acetic acid) will also kill plants; it does a great job of destroying the proteins that make up cells. It can also lower the pH of soil (make it more acidic), which can be inhospitable to growing things, though vinegar will break down in soil over time. It acts as a "contact herbicide," meaning it kills or damages any part of the plant it comes into contact with (or the plant next to it!), but is not transported to other parts of the plant; if the plant is big enough it could be damaged in one area, but perfectly healthy in another.

Kitchen vinegars, like white and cider, are just 5% acetic acid, and often not enough to completely kill more than a small dandelion. However, there are horticultural vinegars that are much more potent—usually about 20% acetic acid. They are labeled to be sold as herbicides and can be very effective. However, at that concentration, horticultural vinegar can also harm humans and other animals, and care should be taken (including reading and following the label—it's the law!) to use it property. It's also important to note that horticultural vinegar is actually more acutely toxic to animals than some traditional herbicides, which often comes as a surprise!

Good uses for horticultural vinegar include preventing stump-sprouting on a recently cut tree (though not those that root sucker), or foliar-spraying a weed or small shrub that does not have a deep root structure. ISN does not recommend using horticultural vinegar outside of its labeled use, or in situations where a systemic herbicide is required for successful control. ISN recommends using horticultural vinegar according to its label in situations where a contact herbicide is desired.

Dish soap is not an herbicide, but it's often recommended for use as an at-home surfactant (a herbicide additive that helps the active ingredient stick to a slippery plant surface). However, it comes with risk—it harms fish and frogs when it gets into water ways by making it difficult for them to breathe, even destroying their skin/gills. Even very small amounts of soap can harm them! Unless you're using soap as a surfactant very, VERY far from lakes, streams, ponds, and storm drains, it's a big risk. Approved, fish-safe surfactants are not expensive and can be purchased from a local herbicide purveyor for use in plant control projects. ISN requests that dish soap is not used for non-dishwashing activities.

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Combinations of various ingredients (Epsom salt + vinegar + dish soap is especially popular online) are generally not recommended, as there is no evidence that the combination works better than just the most effective ingredient alone.

We know this is a lot of information, and a lot of variables. If you'd like assistance in choosing the method that's right for you, please contact us! We'd be happy to help you choose between the available options, which vary by species, site, budget, landowner preferences, and time available.

References and further reading:

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Acetic Acid (Vinegar) as an herbicide, North Carolina State University Extension, New Crops & Organics https://newcropsorganics.ces.ncsu.edu/2013/08/acetic-acid-vinegar-as-an-herbicide/ A very short article with lists of more resources.

Vinegar: An Alternative to Glyphosate? University of Maryland Extension https://extension.umd.edu/sites/extension.umd.edu/files/_docs/programs/ipmnet/Vinegar-AnAlternativeToGlyphosate-UMD-Smith-Fiola-and-Gill.pdf A deep exploration of vinegar and glyphosate as herbicides.Vinegar and Epsom Salt as Herbicides, University of Minnesota Extension https://local.extension.umn.edu/local/article/vinegar-and-epsom-salt-herbicides Exploration of vinegar and Epsom salt as herbicide with a conversational tone.

Get Mow-tivated: Lawn Maintenance Basics

By Alana Otten, Extension Master Gardener

For many homeowners lawns are a focal part of our landscape. Whether you have a small patch of grass to please your pup or a backyard football field, lawn maintenance is a topic on many of our minds as we head into the growing season.

When planning your approach to lawn care, it is important to know your grass and its growth cycle. Michigan turfgrass is typically a mixture of cooler temperature-loving fine fescue grasses such as creeping red fescue, perennial ryegrass, and Kentucky bluegrass. Most of the growth with these grasses occurs during cooler parts of season - spring and late summer/early fall. Giving lawns a chance to grow robust, healthy roots and blades during these times increases resilience during the warmer, more stressful months and equips your lawn for success staving off other environmental and biological stressors.

Implementing the following cultural practices is a good place to start for controlling health and preventing disease, weeds, and grub infestations.

1. **Keep mower blades sharp**. Sharpen at least once per season and when blades start producing ragged brown cuts. Dull blades expose more wounded surface area, making grass susceptible to increased water loss. They can also increase fuel use by as much as 20%.
2. **Mow high.** Adjust mower height to at least 3-4" to shade out opportunistic weeds and help with water retention. Taller grass also provides more leaf surface to photosynthesize energy for growth. Mow to remove about ⅓ of leaf blade height at a time.
3. **Mulch leaf trimmings**. Return valuable nutrients to the soil for growth. Grass clippings can provide up to 50% of nitrogen needs for lawns.
4. **Reseed.** Patch weak or bare spots with a perennial ryegrass seed mixture. Overseeding can also help to incorporate new seed and produce a denser lawn.

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Water smart. Turfgrass typically uses 1" of water per week during an active growth period. During periods of slow growth water with light, frequent applications since the root zone is naturally shallower during these times. Morning watering is best; avoid evenings to deter dampness overnight that can encourage fungal diseases. Getting by with less water will not cause serious harm, but it may stress the grass and provide opportunities for undesirable conditions to gain a foothold.

Fertilizing

If you are considering fertilization, it is best to first do a soil test. Any fertilizer can be detrimental to soil and plant health and our treasured water resources if inappropriately used. If you live near a lake or stream, you should not fertilize within 35' of the water to protect the water from unwanted nutrients. Organic fertilizer is safer than synthetic fertilizer for children, pets, and the environment, as well as having benefits for the soil, including water holding capacity and beneficial microorganism activity. Organic fertilizers are slower acting than their synthetic counterparts, which provide nutrients to plants immediately, but need to be applied more frequently to maintain the desired effect.

Most lawn fertilizers are nitrogen rich and should be applied primarily in the early fall to sustain grass over the winter, but supplementation can be done in the spring as well during periods of active growth when rain and water are plentiful. If your lawn comes in densely in the spring, refrain from fertilizing; enough nutrients are available to support strong early growth without unnecessary fertilizer application. If fertilizer must be used during lower growth periods, a slower release fertilizer or lower rate of application should be used to avoid excess fertilizer leaching into ground or surface water sources. The amount/release of fertilizer used should correspond with the active growth cycle.

Weed Management

Each homeowner has a different level of tolerance for weeds in their lawn. Many weeds can have an ecological benefit. Certain flowering clovers like white clover (*Trifolium repens) and* dandelions are bee friendly examples. Some weeds enhance nitrogen availability by converting it from the air into a form surrounding plants can use. However, if you feel your population of weeds is gaining too much ground in your landscape, you can either pull them or if you decide to use a targeted herbicide, identify the weed first and make sure to purchase an herbicide that is effective against the specific weed. Always apply fertilizers or herbicides according to manufacturer's instructions.

Lawns are meant to be a safe place for people and pets to enjoy being outdoors. Keep this in mind as you plan your landscape and make decisions about your lawn maintenance. Lawns are monocultures that lack diversity in species and support few species of insects or animals. Give some thought to lawn alternatives in your landscape. If you have spaces where grass doesn't grow well, the terrain is a challenge to mow, you want a more pollinator-friendly habitat, to conserve water, or to spend less time pushing or riding a mower this summer start aligning your lawn and landscape management practices with natures' needs and your own.

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Moving Houseplants Outside in the Spring

By Molly Bacon, EMG Trainee

Every year, well-intentioned plant owners decide to move their houseplants outside for the spring and summer. Unfortunately, most will end up being moved too early. Most houseplants, except for those with fuzzy leaves (e.g., African violet), benefit from a summer outdoors, although two of the most frequent mistakes is providing those plants with too much sunlight or putting them out before it is warm enough. Move them outside after the last frost and when temperatures are dependably warm. Most houseplant species originated in the tropics and are sensitive to temperatures below 55 degrees Fahrenheit. Be prepared to bring the plants back indoors on cool nights.

Although a given plant may require full sun indoors, houseplants placed outdoors should receive no more than a half-day of morning sun. Afternoon sun will likely be too strong. Overexposing the tender leaves to the strong summer sun will result in sunburn, turning the leaves yellow or white and eventually brown. Most houseplants will do fine in a shady northern exposure or even on porches.

Most indoor plants can flourish outside if given proper attention. Just like hardening up your indoor started seedlings, gradually expose your houseplants to the additional light by placing them in outdoor living areas such as porches, patios, and sunrooms or a shady area under a tree for a few days and gradually moving them into brighter light. Moving a houseplant from a relatively dark home into very bright sunshine will cause severe leaf burn. The bright sun bleaches out the leaf chlorophyll and causes the leaves to overheat. An hour of intense light can cause leaf damage that will take the plant months to recover from and grow new leaves.

As plants adjust to a new location, their leaves may turn yellow or light green and partially fold. But as they adjust to their new home, the leaves will return to a dark to medium green color and return to a normal state. Once the houseplants have had time to adjust to the bright light, start a fertilization program. Fertilize houseplants on a regular basis and carefully monitor the pots for moisture. Plants grow more rapidly outdoors than indoors and therefore; they require more frequent fertilization and watering outdoors.

Most succulents and cacti tolerate full sun, while other flowering plants like dappled light. Please remember the most intense summer light levels occur between the hours of 10 a.m. to 3 p.m. Also, try to place them out of drying winds and provide protection by using screens of burlap, shingles, or other material. Unless watering manually, make sure they are located where they will receive rain.

Water plants as often as needed. Many container type plants do best if the soil is allowed to become fairly dry before watering. When water is needed, add it until water runs out the drain hole in the bottom of the container. On hot, dry, summer days some container plants may need to be watered more frequently, especially when rainfall is not adequate. **Do not allow plants to become water-stressed before applying water.** Another point to keep in mind is that plants outdoors are exposed to more wind which translates into watering more often to prevent the plants from wilting. If hail threatens, you can protect plants with plastic buckets.

Finally, keep an eye on the plants for disease and especially insects. Make sure any product you might use is labeled for the specific pest you are trying to control and for your specific type of plant.

In the September edition, I will write on bringing your houseplants back indoors.

Adaptive Gardening for the Disabled or Aging Gardener

Shari Froelich – EMG Trainee

As many of us pursue gardening dreams after retirement when we finally have the time, this also comes with potential physical limitations. I happened to experience some issues earlier this year after incurring a fall walking in my woods this winter and breaking some ribs along with some pre-existing thoracic spine issues. It led me down a path of how I will continue to garden if I have physical challenges, so I decided to investigate potential gardening options for those of us who may have some level of physical impairments – independent of aging. Also, as I delve into my own gardening plans, goals, dreams, and aspirations, I have experienced what I will call a mind-body disconnect. I have tons of dreams but must temper them with what I can do physically with strength, endurance and pain issues that pre-existed. I also know the benefits of gardening on mental and physical levels.

The Surgeon General and other leading health professionals recommend that all adults accumulate 30 minutes of moderate physical activity on most days of the week. Osteoporosis is a common condition among older Americans, especially women. Physical activity, especially weight bearing activity, can help slow the loss of bone mass that naturally occurs with aging. As people age, they may experience diminished physical strength, arthritis, limited mobility, or other physical challenges to gardening activities. Careful garden planning can help ensure continued accessibility for people of all ages and physical abilities. (Taken from *Elder-Accessible Gardening*).

Physical activity is essential to healthy aging. Research has shown that physical activity contributes to overall improved health, including better hand strength, improved self-esteem, a reduction in falls, and reduced levels of loneliness when participating in a gardening club. It also reduces anxiety and stress along with lowering depression, boosting mood, enhancing cognitive function, reducing the body mass index (BMI) and improving overall quality of life. Gardening is a joy-filled activity later in life, if the gardener adapts wise alterations.

Some of the helpful ideas that I discovered in my search include the following:

Easier plant access

Consider adaptations like container gardening, tabletop gardens, trellising and raised beds.

Raised bed

When considering raised bed gardening ensure that the bed is deep enough for ample root growth. A 15-inch-high bed allows less stooping and being able to sit down when tending to the garden, but other heights may be used depending on the needs of the gardener. Before buying or building raised garden beds, a few things need to be considered, including the bed height and width, depth of soil necessary for intended planting and materials to be used in constructing the bed. An important consideration is to not make the bed too wide as you will not be able to reach the center. It is advised to make the beds no wider than 4 feet for better arm reach and access with garden tools. If the garden is placed against a wall, a raised garden bed should be no wider than 3 feet.

Materials for raised garden beds can be wood, metal, plastic, brick, concrete block or whatever works best for each gardener. If using wood, use rot-resistant woods like redwood or cedar, though they are more expensive. It is recommended to not use treated wood due to the toxic chemicals used to treat the lumber especially if growing food crops. If treated wood is used, it is recommended linking all sides with heavy plastic placed between the wood sides and the soil and keeping plants at least a foot away from the sides. Advantages of a raised bed are better drainage and may also have a longer growing season. A downside is that the raised beds do lose moisture more quickly and untreated wood may harbor more pests. These gardens must also be hand tilled.

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Tabletop gardens

They are a form of raised beds on heavy supports, generally built to about waist-height and more readily accessible for gardeners in wheelchairs, walkers or who need to sit when gardening for longer periods of time. Soil-filled containers are heavy, which must be taken into consideration when locating a container garden. Sturdy handles enable containers to more easily be moved. For greater ease in handling, a section of old garden hose can be slit, slid over, and taped around thin metal bucket handles.

Think about the container's placement so that plantings will receive the recommended amount of sunlight. It is suggested using a rolling platform base under a container that needs moving in and out of sunlight. Plant stands with sturdy rollers on the bottom are available at many garden centers.

For containers that have more depth than needed for the plant roots, place lightweight, non-degradable fillers, such as flattened milk jugs or soft-drink cans, in the bottom, cover them with landscaping paper and then fill the remaining space with soil to the needed depth.

Both raised beds and tabletop beds lend themselves to long-season growing by utilizing plastic or metal hoops inserted into each side. Then, the planting bed can be covered with protective materials, such as plastic sheeting or fabric row covers.

Trellising plants I

This is another adaptation to minimize bending while gardening, and can be fashioned in various ways. Twine or wire supports can be fastened at ascending levels to posts set into the ground or fixed to opposite sides of raised beds. As plants, such as cucumbers, peas, or pole beans grow, the vines can be trained to grow up the supports, providing for ease in picking the crop while standing upright.

For heavier crops, such as vining squash or melons, supporting each fruit as it grows with a section of onion-bag mesh will help prevent the crop's weight from breaking or pulling vines from the trellis.

Simplifying the landscape

Reducing the size and/or number of raised beds, decreasing the plant variety, using low maintenance perennials, especially native perennials , and mulching your garden are considerations.

Planning for shade seating

The availability of shade is especially beneficial to those with heart or respiratory conditions. Natural materials such as straw bales can be used for seating.

Conserving effort and water

Adding compost to soils, drip irrigations and mulching are effective water conservation practices that can decrease the amount of water that has to be physically transported, giving gardeners and increased ability to care for their gardens.

Considering traffic patterns when planning a garden

The placement of compost bins, water and other resources should be placed near planting beds. Techniques such as sheet mulching can drastically reduce tilling and other maintenance needs such as the no till garden concept. A fresh consumable water source on site for gardeners to drink is also an important consideration.

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Tools for ease of use

Garden centers have a variety of aids which help to lighten the gardening load. Several ergonomic tools are available to make chores easier for gardeners with physical limitations. These tools tend to be lightweight and are designed to keep the wrist in a straight neutral position. They also often include large cushioned handles and adjustable levers or thicker, telescopic handles. It is important to "try before you buy" to make sure it fits your needs.

Other useful equipment includes protective knee pads or kneelers and gardening seats and stools, some of which swivel or roll to minimize bending or crawling on the ground. Adaptive devices also can be installed on existing tools. Some ergonomic features include T-grips, which can be attached to the end of a handle or D-grips which are mounted mid-handle. Lightweight brightly colored hoses are suggested to prevent tripping.

Gardeners can ensure good health by staying hydrated, pacing themselves and getting assistance from others when needed. It's always a good idea to keep a cellphone handy in case of need of assistance.

For further reading on these topics are *"Gardening for a Lifetime,"* by Sydney Eddison, and *"The Right Size Flower Garden,"* by Kerry Ann Mendez.

Adaptive Ergonomic Gardening Hand Tools at https://www.thewrightstuff.com/search.asp?keyword=gardening

Search *Adaptive Gardening: Techniques for Gardeners with Disabilities* on YouTube for many other ideas.

Happy gardening!

Help Wanted

MGANM Treasurer

MGANM is looking for a MGANM member to volunteer to serve on our Board as the Treasurer.

Our long-time Treasurer, Glynis Waycaster, has stepped down due to personal reasons. Thank you, Glynis, for all of your time and your commitment to MGANM. You will be missed.

The duties of the Treasurer include maintaining the association's financial accounts in QuickBooks, making deposits, writing checks, reconciling the accounts monthly and a few other duties. We are looking for someone with bookkeeping experience.

The Board meets monthly, and it is a friendly and fun group of people to get to know.

MGANM Historian

MGANM has two boxes of association records that were gifted to us by Michigan State University Extension. We are looking for a volunteer that could do bulk scans (by year) creating PDFs so we can safely keep and reference them. This is our history, and we would hate to lose it. If you enjoy history and have a scanner that can scan multiple pages at a time into PDF format, this could be the job for you! It also counts as volunteer hours!

If you are interested, please send a **Contact Us message** via the MGANM website. It is a great way to acquire your volunteer hours.

Asparagus – Food of the Month

By Molly Bacon – EMG Trainee

Asparagus season in Michigan is always highly anticipated, and it is getting closer. Even though it only lasts 6 to 8 weeks, recipes abound for this wonderful vegetable. Even though asparagus is still growing during the year, the plants need to rest to recover for the following year. Spring is its peak season and is one of the first vegetables harvested. It can grow up to two inches a day. We always seem to be able to find it for sale in stores, but it is never as good as right out of the garden. Look for bright green stalks and tight tips when purchasing asparagus at the markets. The tips may have a purple cast to them.

Asparagus is native to the Mediterranean, was eaten by the ancient Greeks and is a perennial plant. Establishing a good asparagus bed requires considerable work but can reward you for 20-30 years. Place it out of the way where it will not be disturbed by normal cultivation.

Asparagus grows best in well-drained soils with a pH between 6.5 to 7.0 and does not tolerate extremely acidic soils. It can grow in heavy, medium, or sandy soils if the soil is well-drained and does not exhibit pooling water after rains.

Asparagus should be planted as soon as the ground can be worked in the spring. One-year-old crowns or plants are preferred. Adventurous gardeners can start their own plants from seed, but this adds yet another year to the waiting period for the first harvest.

Place the plants in a trench 12 to 18 inches wide and a full 6 inches deep. The crowns should be spaced 9 to 12 inches apart. Spread the roots out uniformly, with the crown bud side up, in an upright, centered position, slightly higher than the roots.

The edible parts of the plant are called the spears and are technically the stems. Spears emerge from underground buds at the base of the root system. These buds and roots are called “crowns.” As already mentioned, after the short harvest time, spears are left to grow where they develop leaves that are called “ferns.” It is the fern that creates the energy that will be stored in the underground portion to produce the following year’s spears. It is important to take care of the ferns even after the harvest is over to make sure you will have good future harvests.

There are female plants and male plants (dioecious). All produce edible spears, but the female produces more spears with smaller stems.

Soil moisture is important for good root and fern growth in asparagus. Even though asparagus ferns rarely exhibit obvious signs of drought stress, they need consistent soil moisture to stay healthy for the next year. Watering during the harvest season may also increase yields in very dry years. Asparagus patches should receive at least one inch of water every week.

A year after planting the crowns, do not harvest any spears that first spring. Allow the spears to become ferns and build the strength of the crowns.

The second spring after planting crowns and if the plants were strong and healthy during the previous growing season, begin to harvest when the spears are six to eight inches long. In the first year of harvest, only pick asparagus for two weeks. After that, allow the spears to develop into ferns.

In the following years, harvest asparagus up to July 1st. Some gardeners do not harvest during the second year at all, preferring to allow the plants to build more strength before finally beginning to harvest in the third year.

Harvest spears 5 to 8 inches in length by cutting or snapping. To cut a spear, run a knife into the soil at the base of the spear and carefully sever it. Because the spear is cut below the point where fiber develops, it becomes necessary to remove the fibrous base from the tender stalk. Cutting may damage some spear tips that have not yet emerged from the ground. To snap a spear, grasp it near the base and bend it toward the ground. The spear breaks at the lowest point where it is free of fiber.

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Common diseases of asparagus include Fusarium crown rot, asparagus rust, and Stemphylium purple spot. Asparagus rust causes yellow and rusty orange spots to form on asparagus stems after harvest. Purple spot causes sunken purple spots on asparagus spears, and tan spots with a purple border on mature stems. Following freezing weather in the fall, the asparagus tops should be removed to decrease the chances of rust disease overwintering on the foliage. One pest is the Spotted Asparagus Beetle.

Weeds compete with asparagus for soil nutrients, water, and light, so managing weeds will help support a more bountiful yield of spears. Removing weeds by hand is still one of the most effective methods, especially in smaller asparagus beds. Additional methods include well-timed hoeing, flame-weeding, cover crops, and careful use of select herbicides.

Fresh asparagus is such a springtime treat that many eat it within hours of picking. It will also keep for up to a week in the refrigerator. Put them in a plastic bag in the crisper drawer. Cook asparagus as soon as possible to ensure peak flavor. Spears start to lose flavor and moisture as soon as they are harvested. For this reason, imported asparagus, while still good, tends to lack flavor and makes home grown Michigan and Illinois spring crops the most desirable. You can also freeze an asparagus harvest. Asparagus should only be canned if you can process it in a pressure canner.

Asparagus is low in calories and provides substantial amounts of two antioxidants—vitamin A and C. It truly shines as a source of folate and has a large amount of fiber.

Nutrition Facts
(Serving size, 1/2 cup cooked)
Calories- 90
Protein- 2 grams
Carbohydrates- 4 grams
Dietary Fiber- 1.5 grams
Potassium -144 mg
Vitamin C -10 mg
Folate -131 mcg
Vitamin A -485 IU

Next is my favorite recipe for asparagus other than just roasting it with olive oil and some seasonings.

Sun-dried Tomato Pesto Shrimp Asparagus Skillet
Serves 4

Ingredients
- 3 oz Angel Hair Pasta – previously cooked
- 1 tablespoon olive oil
- 1 onion – chopped
- 1 garlic clove – minced
- 1 pound asparagus – tough end snapped off and cut into about 2” pieces
- 1 pound raw shrimp – shells removed. I use extra large shrimp
- 5 tablespoons of sun-dried tomato pesto – I use store-bought
- ½ teaspoon pepper
- 1 teaspoon salt
- ¼ cup white wine
- 2 tablespoons of chicken broth

Directions
1. Precook the pasta.
2. In a large skillet add olive oil and onions. Sauté for about 5 minutes or until the onions are soft.
3. Add garlic and cook for about 30 seconds.
4. Add asparagus, 1 tsp. salt, 1/2 tsp. pepper, 1/4 cup white wine and 2 tablespoons chicken broth.
5. Sauté for 8 minutes.
6. Add shrimp and cook until the shrimp is pink. Be careful to not overcook them, otherwise they will have a rubbery texture.
7. Remove from heat. Add the sun-dried tomato pesto, cooked angel hair pasta, and mix everything well to combine. Enjoy with a slice of garlic bread or Texas toast.

National Wildlife Foundation: Sacred Grounds

by Cheryl A. Gross, AEMG

Several years ago, the National Wildlife Federation created a program called Sacred Grounds to promote native plant gardens and wildlife habitat for houses of worship. The concept is centered on community. By working with houses of worship, there is diverse outreach to the congregation as well as public community access. Find more information on the program here: https://www.nwf.org/sacredgrounds

The program is loosely constructed so that houses of worship can adapt the program to a project that works best for them. Initially, Sacred Grounds funding and advising was offered to inner-city and urban churches where "nature" was in short supply. One project created a rain garden to divert water away from a leaky foundation and solved a building problem. Another project was created to improve pollinator services to a food garden on the site. Many projects have a mindfulness element where congregation members and the public can be in-nature when visiting the garden.

In addition to engaging congregations with nature, there is a worship aspect to the program supporting stewardship of the earth. Houses of worship who have a Scared Grounds project do not isolate the garden from the life of the congregation. Messages to the congregation and intergenerational involvement are all elements of the program. This creates win, win, win, wins by increasing native plants in unnatural settings, teaching congregations and public neighbors about the beauty and benefits of native plants, being actively involved in environmental stewardship, and including native plants in the life of the congregation.

This past March 4-5 churches in our region were granted funds and consulting services from the National Wildlife Federation, administered through the AuSable Institute in Mancelona. The AuSable Institute offers environmental educational programing. The Presbyterian Church of Traverse City is fortunate to have been granted funding. They have a large property a block away from the intersection of Munson Avenue and Airport Access on Westminster Road. Two Master Gardeners, Linda Racine and I are members of the congregation and active in environmental projects at the church. Gary Richardson, my husband, is on the Buildings and Grounds Committee of the church and is leading the Sacred Grounds project.

Our project plans are well underway. Linda is working on promoting the project within the church and tying our message into worship and adult education. The Vacation Bible School curriculum is on pollinators and the children will do some of the planting. Linda and I have created plant lists to correspond with the site and across season bloom times to develop a pollinator and butterfly (host plant) garden. We are currently sourcing plants and building a budget to make the very most of our grant.

Linda has made The Presbyterian Church of Traverse City Sacred Grounds a Master Gardener project. There will be opportunities for MGs to earn volunteer hours. Additionally, we have been working with Nate Walton to make a connection to other Master Gardener Pollinator gardens on Front Street, at Clinch Park and elsewhere. These connections may be a season or two away until our plants are flowering. We are dreaming of having maps available to direct people to various native plant gardens around the City.

Saving the best for last, The Presbyterian Church of Traverse City Sacred Grounds grant is renewable. We hope to continue to transform spaces on the church property with little to no ecological value, bed-by-bed into healthy, beneficial wildlife habitat, a truly Sacred Ground.

A Master Gardener's View of Seeds

By Sue Sensenbaugh-Padgett – Advanced Extension Master Gardener

The Light that begins the gardening journey is often an individual's first encounter with the growth of a simply seed. A realization of the amazing power packed in those tiny packages creates a deep delight in the process. So, let's learn about 3 of our Master Gardeners' experience with seeds.

Meet Melissa Zelenak, Laura McCain, and Barbara Backus.

Our questions are:

What is your first experience with seeds? Anecdotes welcome.

Melissa recalls: "As a little girl I was always pulling plants apart to see what they were made of ."

Laura tells us: "I started my seed experience planting zinnia seeds with my dad when I was in grade school. Then I graduated to the vegetable garden. Finally, I got to help with the rock garden in the backyard that had roses in it. I've always loved both flower and vegetable gardening. I mainly planted straight outdoors as starting seeds even with a grow light in my laundry room often ends up with weak scraggly plants. I would love to do some type of greenhouse seed starting someday."

Barbara says: "I don't recall my 1st experience with seeds; but do recall at age 14 being given permission from my mother to plant annual Bachelor Buttons seeds next to a line of her prized rose bushes. As it turned out, my Bachelor Buttons grew and prospered, undoubtedly because of my mother's heavy fertilization of her roses. Within 6 weeks, my Bachelor Buttons spread tall and wide, partially overtaking the roses. My chest was swollen with pride and I shared Bachelor Buttons with friends too poor to own such a rich expanse of blue."

"Ah, imagine that day when I returned home planning to gaze upon my blue buttons and finding nothing but stubble along the row of roses. "Yes, I cut them down. They blocked the sun from my roses," my mother coolly explained."

Tell us about your favorite seed sources (seed saving included).

Barbara says: "Currently I mostly use Select Seeds as they carry some hard-to-find flower seeds. I seed start flowers that are hard to find commercially grown, such as *Tithonia* and particular colors of flowers like Tangerine Signet Marigolds or Orange Benary Zinnias. The Select Seeds packet instructions and detailed brochure about indoor seed sowing give excellent information about germination requirements. Some seeds need light to germinate, and others need dark, some need cold stratification and others need heat."

Laura is clear with: "My favorite is always Johnny's Seeds."

Melissa gives: "I like getting them in the wild and from my own plants or ones I know personally."

If you were advising a new gardener, what would you share about seeds?

Laura advises: "Buy quality seeds. They give more interesting varieties and better track records for production. I totally love the lettuce varieties from Johnny's."

Melissa states: "Label them! And maybe keep a little envelope in your pocket when out walking... I have too many slips of paper, baggies, napkins—or whatever I could find to hold them in at the

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time—with seeds that at the moment I knew what they were and today I don't LOL!!"

Finally, Barbara gives us: "For the gardener new to seed starting, I would recommend trying easily grown flower seeds, such as cosmos, marigold, or zinnia, to develop confidence. I've had success with Jiffy Pot Pellets as a mess free beginning to germinate seeds, which I then move to larger pots. Though I have used grow lights, I find my south window sills are excellent places to start seeds and much less expensive. Plus, I like admiring their little green sprouts while drinking my morning coffee."

"If seeds are started the last week of March, just when winter is too much to bear, you will give yourself a psychic boost and have a reason to pop out of bed in the morning to check for more germinating seeds, and it will be a happy, hopeful start to the day. By the end of April, there may be enough warm days to move the seedlings to a sheltered porch and begin the hardening off process; and moving them from shade into sun over a week. By mid-May, weather permitting, well-loved home-grown plants will be ready for your garden."

It's interesting seeing the differences and similarities of our gardening lives. So do this for me:

Place a seed, the tiniest you can find, that of a hydrangea or begonia or giant sequoia, singly upon your thumb. Now hold it up to the light to inspect it more closely. Yes, you may use your reading glasses.… inside that speck upon your thumb is also found the embryo, a tiny mass of cells that can when awakened destroy concrete, melt hearts, and provide the stuff of honey.

-Daniel J. Hinkley

Next month our subject is shrubs. Keep an eye on your email for an invitation to share your story.

For the latest News and Events

Click here for the News page on the MGANM website

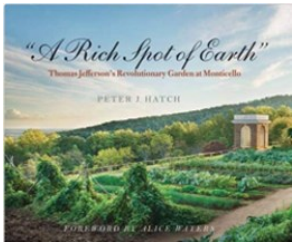
Check back often!

MGANM Book Club Review and April & May's Book

April's book is *Windcliff* by Daniel Hinkley.

It's a story of people, plants, and gardens. Sue Haadsma-Svenson recommended this month's read. She reports the author grew up in Michigan, and it looks like a great read! Our next Zoom book club meeting is Wednesday, April 28th at 6:30 p.m. This is a casual, relaxing, fun meeting with a glass of your favorite beverage (BYOB) to start things off!

May's is *A Rich Spot of Earth: Thomas Jefferson's Revolutionary Garden at Monticello* by Peter Hatch and Alice Waters.



Please note that there will be no new books to read during the summer months. Our last book club meeting before our summer break is on Wednesday, May 26 at 6:30 p.m.. Our book club meetings will resume sometime in September.

Barbara Fasulo-Emmott
Book Club Chair

MGANM March Presentation Minutes "*Plants Used by Native Americans*"

By Erin Paxson – EMG Trainee

Plants Used by Native Americans- the Anishinabek was presented by Nathan Wright. A whopping 195 registrants viewed the March Presentation. As owner of the Herbal Lodge, Nathan shared his knowledge of herb use with us while also giving a brief history of the Ojibwe people.

The Anishinabek used plants for a great many things in their daily lives. Their society was completely sustainable. The Anishinabek people live by the seven values gifted to them: love, respect, truth, honesty, bravery, humility, and wisdom. They migrated west from the St. Lawrence River to the Great Lakes, following the sacred miigis shell. Nathan shared the Ojibwe creation story and introduced us to a timeline of major dates affecting the rights and lives of the native people. The native use of plants began many thousands of years ago, with corn, squash and sunflowers being domesticated around 3000 BCE. They learned plant use from observing the animals. Agriculture eventually developed as well as colonization. In 1820, the U.S Pharmacopeia began stockpiling herbal and pharmaceutical medicines. Out of 296 substances, 130 were made from native plants. In the late 1800s, the native culture and herbalists went underground mainly due to cultural suppression. But as many of these cultures were re-established in the 1970s, the Freedom of Religion Act in 1978 once again opened the door to herbalism.

Nathan discussed the four sacred medicines used for everyday life and ceremonies. These are sweetgrass, tobacco, sage and cedar. Sweetgrass represents love and is calming in nature. Braids of the grass were made to honor the mind, body and spirit. Tobacco was the first offering made through smoke as it connects one to the spirit world. Sage was used for ceremonies to release negative energies and troubled minds. Cedar was used to purify the home and is therapeutic in baths. When put in fire, cedar will pop, and this would call the spirits. Cedar tea is a drink for protection.

Plants were used for textiles and tools. Mats were made from grasses, canoes and baskets from bark, and insulation made from cattails. Burls could be used as a club and other plants and trees for pipes and spoons. Pine pitch makes great crazy glue.

Food and medicine are considered the same in that they both heal bodies while providing nourishment. Western culture had a hand in dividing them. The famous Three Sisters planting is corn, beans and squash and they complement each other in the garden and nutritionally. Corn provides tall stalks to climb, beans bring nitrogen and squash acts as a mulch. Ancestors planted gardens that are still being used today. Wild rice was sown at the same time it was harvested. Forests were managed with controlled burning, but this also left behind rich soil.

Nathan says wildcrafted plants are more medicinal than farmed plants. He recommended several medicinal plants to add to your garden or responsibly forage. Comfrey contains the hormone auxin which generates new tissue. If a tea is made by soaking comfrey leaves in water, it can be applied to ailing plants. Plantain is thought to be a weed, but this plant has antibacterial properties and is useful in treating cuts. Calendula is beneficial for skin ailments. Rose hips correct dark spots. Devils club can treat sore backs, muscle aches, carpal tunnel and other arthritic problems. Tamarack bark soothes nerve damage and anxiety. Boil the bark shavings and let sit overnight to make a tea.

Ten plants to try in our area are wintergreen (heartburn), cedar (detox), balsam (resin is antiseptic), aspen (white powder on bark for sunscreen), sumac, spruce tips (delicious tea), pine needles (vitamin c tea), sweet fern (constipation), stinging nettles (nutritious), and yarrow (headaches). Of course, it is vital to know what you are harvesting before ingesting plants.

Nathan sells herbal products through the Herbal Lodge and can be reached at Nathan@herballodge.com

MGANM April Presentation Minutes *"Backyard Conservation"*

By Erin Paxson – EMG Trainee

In this month's meeting, Cheryl Gross tells us how to reconnect with nature by turning our lawn and garden spaces into a haven for insects, birds, and other wildlife. As an Advanced Master Gardener and President of Plant It Wild, Cheryl gave a clear and concise presentation that offered a wealth of information.

Cheryl began by defining the main issues causing environmental stress. She then focused on human disconnect from nature, examining the mindset many people have in regard to their property. The yard is often viewed as separate from nature and a reflection of affluence and fashion. Currently, 40 million acres of land is covered with turf grass. It is our largest crop and is often treated with herbicides and pesticides. Turf grass requires a large amount of water to maintain it and offers little if any inhabitable space for critters. When we garden for looks, many times the plants we choose are either invasive or sterile. Cheryl gave examples of popular invasive plants such as the Japanese Barberry, Japanese Lace Leaf Maple, Butterfly Bush, Bradford Pear, Fire Bush, and Japanese Snowball Viburnum. As a result of these invasive plants and lawns, pollinators, birds, and insect biomass are in serious decline. Another concern is the pollutants added to water, ground, and air as a result of our gardening practices and gas-powered tools.

The goals of backyard conservation include experiencing nature where we live, increasing insect biomass and therefore feeding the birds, increasing pollinators that feed us, and decreasing pollutants. Cheryl noted books by authors Douglas Tallamy, Heather Holm, and the Xerces Society as good resources for more specific information on the population declines. Backyard conservation strengthens the web of life. When there is healthy soil, native plants with long roots, and critters attracted to the plants, the web is balanced. With a healthy web, parasites will control excessive plant damage due to pests.

How does one begin transforming their yard to attract more wildlife and insects? Cheryl breaks it down in four steps. The first step requires you to assess your yard. How much lawn do you have and how much do you need? Cheryl has decided to keep lawn space for her dog, walking paths, a place to pile snow along the driveway and over the septic field. A well-designed space can also be inviting for hosting neighbors. When Cheryl began, she put up a sign in her yard to inform her neighbors why they were killing the turf grass. Her sign read as follows: Pollinator Garden and Wildlife Habitat Under Construction.

The second step is assessing the landscape, what plants must go? Invasive plants are the first to go, and any non-native plants except for the few you cannot part with. According to Douglas Tallamy, 70% of all plants including lawn must be native.

The third step is to prep planting beds. Remove existing material using whichever method you prefer. Consider expanding foundation landscaped beds. Locate additional beds taking into consideration the views from your windows and how your property will be used. Cheryl utilized marking spray to help with their design layout. She added a shrub and tree bed on a steep slope, a bed to absorb excess water near the road, a pollinator bed near the front windows, a bed to break up the lawn and a rain garden to divert water away from the house.

The last step is to analyze the landscape beds and make plant choices. Extensive lists of the right plant for the right location can be found at www.plantitwild.net. There are many to choose from and Cheryl says, "There is always a plant for that!" It is vital to know the Latin name of the native plant you are considering. Cheryl warns not to purchase cultivars except for those that may only vary in size from the original plant. Cultivars that vary in color are not a good food source for insects. Aside from smaller plants consider adding one or more canopy trees. Deciduous trees provide shelter, nesting sites, shade, sequester large amounts of carbon, support wildlife and boost the value of your home. Conifers will provide

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seeds, host caterpillars, act as nesting sites, shelter and make wonderful green fences. Small trees give the landscape structure, pollen, nectar, seeds, and host caterpillars as do shrubs. Forbs, sedges, and ferns have many benefits and add diversity. For pollinator and adult butterfly support, plant for a variety of bloom times that will cover the flowering season. Diversity in color, flower shape and size will attract specific pollinators. Host plants are equally as important as those that provide nectar.

At this point, Cheryl presented the eleven beds she has cultivated with pictures of the initial bed and several years later. The growth is exciting to see and drives home the idea that most native plants will eventually fill in the gaps. Her work has also inspired neighbors to add garden beds to help combat drainage issues in their yards. The recording of the presentation is available and there are helpful tips and a list of recommended nurseries to listen for with the viewer questions.

Thank you, Cheryl, for sharing your knowledge of backyard conservation and inspiring us to make a change!

Toll Free Lawn and Garden Hotline

1-888-678-3464 (1-888-MSUE-4MI)

Staffed by MSU Extension consumer horticulture educators and Master Gardener volunteers. The hotline is open weekdays between 9 a.m. and noon and 1 to 4 p.m. Select option “1” to speak directly with a gardening expert!

Coordinator’s Corner

Nate Walton, MSU Extension Master Gardener Volunteer Coordinator

What you need to know about volunteering as an MSU Extension Master Gardener Volunteer or Trainee in the spring of 2021.
I have received many questions from the MSU Extension Master Gardner Volunteers (EMGVs) this month, about MSU’s policies and guidelines around volunteering as an EMGV this spring. I am going to do my best to put all of the info that you need to know into this article, so that EMGVs can refer back to it, should they have any questions this spring. This information is current as of the date it was written (4/14/21). However, it is subject to change, so please refer to your latest email communications from the state EMG Program (Sarah Rautio or Diane Brady) for more up-to-date guidance.

Volunteer Hours Requirements to re-certify for 2022
If you were a certified EMGV in good standing going into 2021, then all you will need to re-certify for 2022, is to report at least 10 Continuing Education hours, by December 31st, 2021. The volunteer hours requirement has been waived for 2021. Free online education to count toward this requirement can be found on the VMS home page or the Gardening in Michigan website.

If you are an EMG Trainee, your 40 hours initial requirement to certify now has a deadline of December 31st, 2022.

Safety Compliance IF you choose to volunteer as an EMGV (as of 4/14/21)
There are many ways that you can volunteer safely from home by providing live online educational programs, administrative support to your local EMG program, remote planning, online plant, and pest diagnostic support, etc. However, if you feel safe to volunteer in an in-person and on-site capacity for an approved EMGV project, then there are a few steps to complete before you can begin.

Step #1: Agree to follow the MSU Extension EMG Program Safety Guidelines.

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To do this, you will fill out an online Safety Guideline Agreement Form. There are three types of safety guideline agreement forms. There is one for regular food garden volunteers, one is for leaders of food gardens, and one is for non-food garden volunteers. I have included the links to each form below. Each EMGV and/or Trainee only needs to fill out one form. However, if you work in multiple gardens and some of them are food gardens, while others are non-food gardens, then please fill out both applicable forms. By filling out the survey, you are agreeing to follow the safety guidelines, and that will cover you for any project (of that type) that you are working on, for all of 2021.

Step #2: Permission from the landowner.

I must have, from the property owner at each MSU EMGV project site, written consent for EMGVs to perform work at the site. If you are the lead volunteer at a project site, please ask the property owner to send an email to me that clearly grants permission for our MSU EMG volunteers to perform work on the property. OR there is also an online form that you can provide to them, which I have included with the other links below. If you are unsure if your site already has a permission letter, please reach out to me for clarification (waltonn2@msu.edu, 517-410-4578).

Here are the links for volunteers in the Northwest Lower Peninsula of Michigan*:

Food Gardens: https://msu.co1.qualtrics.com/jfe/form/SV_e4Lb0RTPrg7G9z8

Non-Food Gardens: https://msu.co1.qualtrics.com/jfe/form/SV_0vPLTxo2h9ooNP8

Food Garden Leaders: https://msu.co1.qualtrics.com/jfe/form/SV_3a3bM722zjTFSvA

Land Use Permission Form (to be filled out by landowner or other responsible party): https://msu.co1.qualtrics.com/jfe/form/SV_6hWtQ9CggjLvIA6

*The Northwest Lower Peninsula Geographic Region for the purposes of the MSU Extension Master Gardener Program (as of 4/14/21) includes the following counties: Emmet, Charlevoix, Antrim, Kalkaska, Grand Traverse, Leelanau, Benzie, Manistee, Wexford, Missaukee, Mason, Lake, Osceola, and Clare. If you are volunteering outside of those counties, you may need to fill out a different form. Contact Nate Walton (waltonn2@msu.edu) for clarification.

Keeping Track of Hours, Reporting Hours, Etc.

For the foreseeable future (as of 4/14/21), there is no online system for you to report your EMGV hours. Please keep track of your hours manually, such as in a notebook or computer file that is easily accessible, and you won't lose track of. The MSU Extension Master Gardener Program is migrating the administrative platform for volunteers from the Volunteer Management System, over to Volunteer Central. Once Volunteer Central is up and running, you will be able to retroactively report your hours.

Some of you will already be familiar with Volunteer Central as the platform for completing your Volunteer Selection Process (VSP). However, others of you may have completed your VSP prior to the activation of Volunteer Central. If you fall under that category, you have an account in Volunteer Central, but you will need to set the password before you can access your account. For instructions on how to set up your Volunteer Central access, keep an eye out for emails from John Wurm (EMG Program Support), or reach out to him directly at wurmj@msu.edu.

Hang in there, full functionality of Volunteer Central will be coming soon!

EMGV Project Approval

Starting a few years ago, MSU Extension began requiring that a project approval form be filed and approved by your local EMGV Coordinator before the work could be counted as official EMG volunteer hours. This policy continues into 2021. There is a list of approved projects for your roster on the VMS home page. The approved projects will also be listed in Volunteer Central. If you are unsure if the project that you'd like to volunteer under is an "approved project", check with your local coordinator. If you are in the Northwest Lower Peninsula region (see list of counties, above), then your coordinator for project approval is Nate Walton (waltonn2@msu.edu). You can apply for approval of your project by filling out the Volunteer Project Application forms found on the VMS home page, under Local Links or in the Newsletters/Documents section. Submit the completed form to the EMGV Coordinator for your geographic region in Michigan.

President's Letter : May 2021

Michele Worden, AEMG, MGANM President

I am writing this letter looking out on a cold and rainy April morning. My heart is brightened by the glowing daffodils and by the awareness that this is National Volunteer Week.

For National Volunteer Week (and all through the year) I want to thank all the Master Gardener volunteers that give so much back to their community. You make the world a better and greener place. I am so thankful for your good works in the community.

I also want to thank our volunteer board. We could not do this without them. They each give their time and knowledge and talents. They are the glue that holds the association together and makes our public education efforts possible. They also inspire me every day and I enjoy when we get together. We laugh a lot at our board meetings. Gardeners are good people.

We do have two volunteer opportunities that we hope you can help us fill. We are seeking a new **Treasurer**. We are so grateful to Glynis Waycaster for her long years of service, but she is needed more in surgical support at Munson, which is her day job. If you are good with details, and numbers do not scare you, please consider joining us. It's a light load but requires some attention each month for membership and to pay the dozen or so bills we have each year.

We are also looking for an **Historian**. MGANM has two boxes of association records gifted to us by Michigan State University Extension. We are looking for a volunteer that could do bulk scans (by year) and place them into PDFs so we can safely keep and reference them. This is our history, and we would hate to lose it. If you enjoy history and have a scanner that can scan multiple pages at a time into PDF format, this could be the job for you! It also counts as volunteer hours!

I am looking forward to the May speaker, Robin Smilie, and her talk on creating a Resilient Garden. See you then!

Enjoy the daffodils. They bloom so fleetingly.

34th annual *Michigan Native Plant Conference* Review

By Lillian Mahaney-Leland, Advanced Extension Master Gardener

The Wildflower Association of Michigan is a valuable, educational organization. The following is their **mission statement**: WAM is a not-for-profit, member-based organization founded in 1986 and is run by board members who meet on a quarterly basis. We are committed to being a resource for residents in Michigan (homeowners, corporations, land managers, educators, naturalists, and others) who wish to learn more about native plants and their associated habitats. We advocate for and provide education on native plants and native landscaping through our conference, our website and other social media, our grant program, and our newsletter.

Our grant program is an important function of the WAM mission. This self-funded program encourages educators to teach the value of native plants and habitats by providing grant money to classrooms or schools that make a commitment to using native plants on their school campuses. Grants are also awarded to nonprofit groups to improve public garden spaces with native planting designed to educate the public about the benefits of native plants. Since its inception, WAM has donated more than $100,000 in grant funds. To join WAM please see the website www.wildflowersmich.org

May 7th and 8th was the **34th annual *Michigan Native Plant Conference*** and was held in a virtual format this year. During the board meeting it was mentioned that there were significantly more attendees than in the previous year.

The conference had 2 highly respected keynote speakers, plus 14 break-out sessions and a nice marketplace. All the presentations included a Q&A feature, and all presentations will be available on a recorded basis to attendees.

The **Day One Keynote Speaker** was **Heather Holm**. Heather had an avid interest in natural history and botany at a young age and spent much of her childhood exploring the woodlands and prairie on the family property, established by her great-great grandfather in the 1850s. She studied horticulture and biology at the University of Guelph and later web programming and digital design at Seneca College, Canada.

Heather Holm is a biologist, pollinator conservationist, and award-winning author. In addition to assisting with native bee research projects, she informs and educates audiences nationwide, through her writing and many presentations, about the fascinating world of native pollinators and beneficial insects, and the native plant communities that support them.

Her first book, Pollinators of Native Plants, was published in 2014, and her second book, Bees, published in 2017, has won six book awards including the 2018 American Horticultural Society Book Award. Her forthcoming book, Wasps, will be available in January 2021. Heather's expertise includes the interactions between native pollinators and native plants, and the natural history and biology of native bees and predatory wasps occurring in the Upper Midwest and Northeast.

Her presentation was: "***Restoring Ecosystem Functionality and Biodiversity***" How can humans benefit from green infrastructure and ecological landscape restorations? Heather discussed ways we can achieve a sustainable coexistence with the rest of life on earth. Models of restorative landscaping including residential and community opportunities were highlighted, as well as thoughtful plant selection, ecosystem functionality, and how biodiversity can be maximized. A focus on pollinator habitat and outcomes, trouble shooting and monitoring of restorations, and funding opportunities was included in the presentation.

The **Day Two Keynote Speaker** was **Neil Diboll**: Neil received his degree in Environmental Sciences from the University of Wisconsin – Green Bay in 1978. He attended the University of Michigan Biological Station in Pellston, MI ("Boot Camp for Biologists") during the summer of 1977. He has since worked for the U.S. Park Service in Virginia, the U.S. Forest Service in Colorado, and the University of Wisconsin. In 1982, Neil began his involvement with Prairie Nursery, producing native plants and seeds and designing native landscapes. He has since devoted his efforts to championing the use of prairie plants, as well as native trees, shrubs, and wetland plants, in contemporary American landscapes.

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In addition to helping popularize the use of native plants long before they were "cool", Neil developed the first scientific methodology for designing prairie seed mixes. By calculating the relative numbers of seeds per square foot for each species in a seed mix, the resultant prairie plant community could be more accurately predicted. Neil also worked to set industry standards for seed purity and germination to assure customers receive quantifiable, viable seed.

Neil's work includes designs for residential, commercial, and public spaces throughout the Midwest and Northeast United States. The essence of Neil's philosophy is that we, as stewards of the planet, must work to preserve and increase the diversity of native plants and animals, with which we share our world. The protection of our natural heritage and our soil and water resources is essential to maintaining a high quality of life for today, and for the children of future generations to come.

His presentation was: ***"Genetic Diversity and Plant Preservation".*** The fields of agriculture, silviculture, and horticulture have historically focused on selecting "superior" plants to serve the needs of food production, lumber and fiber production, and the human fascination with bigger, longer-blooming, and more colorful ornamental plants. Only recently has the discipline of ecology entered mainstream gardening. Ecological gardeners tend to be more concerned with creating low maintenance, sustainable, native gardens that provide not only enjoyment for the gardener, but also preserve native plant gene pools while creating habitat for birds, butterflies, pollinators, and other creatures.

Properly designed and installed, native plant landscapes require little if any watering, fertilizing, or pesticides. With increasing concern over water usage in the landscape, excessive toxins and nutrients in the environment, and the decline of pollinators, diverse native plant gardens can serve as attractive alternatives to higher maintenance, more expensive traditional landscapes.

Neil shared his 40 years of experience in providing native plants and seeds to Midwestern gardeners and restorationists. He explained why preserving a broad gene pool for each plant species is good stewardship of the planet, and how it applies to gardening in a time of changing climates. Neil showed examples of how native prairie meadows have been successfully installed in the Upper Midwest in USDA Plant Hardiness Zones 4 and 5, similar to those in Wyoming, although with significantly higher annual rainfall. Plants that are native to both the Midwestern prairies and the state of Wyoming were also highlighted.

During the 2-day conference the **14 break-out sessions** were held and presented by highly qualified individuals. The following are the session titles:

"Monitoring and Managing Deer Impacts on Michigan's Wildflowers, Trees and Natural Communities".

"Rebuilding Plant Diversity Above and Below the Waterline."

"Rare and Declining Insects in Michigan and Habitat Associations".

"A Superior Wildflower Adventure, Looping Lake Superior in Search of Native Orchids".

"How to Identify Some of Michigan's Invasive Plants".

"Pollinator Decline and Conservation: The Role of Research, Education and Community".

"Monarch Butterfly Conservation: Roles of Predators and Ecological Disturbance".

"The Underground World of Native Medicinal Plants in Trade in North America".

"Restoring Michigan's Prairies, Aboveground and Below".

"Birds and Berries: The Importance of Native Fruit-Bearing Shrubs for Migrating Land Birds".

"Natives vs 'Nativars': Do Cultivars of Native Flora Support Native Fauna?".

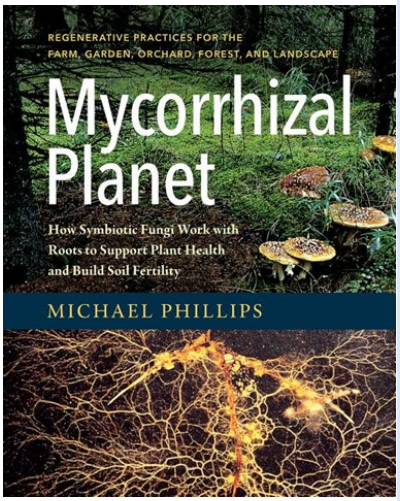
"Advancing Like a Fire Through the Understory: A Regional Assessment of Oak Savanna Restoration".

"Interpreting Variation in Restoration Outcomes: Understanding the Drivers of Plant Diversity and Ecosystem Function in Restored Prairies".

Stories from the Understory and Overstory: Lessons Learned About Restoration from Our Plant Partners".

Michael Phillips' *Mycorrhizal Planet*

Review and notes by Erin Paxson



Being a relatively new gardener, I am on a mission to learn as much as possible about all things green. My dilemma is this; when I open a book about soil biology, I tend to fall asleep. Most of what I read is so heavy with scientific jargon I am unable to make sense of the information. That is until I stumbled upon *Mycorrhizal Planet*! Michael Phillips is a farmer who has devoted his time to reading and evaluating scientific articles in the hopes of making the information more accessible for the masses. He walks the reader through mycorrhizal fungal networks and plant health with enough information to satisfy intermediate gardeners. This book successfully connects science with that which we observe naturally in the garden. I put together some basic notes from the book and recommend reading *Mycorrhizal Planet* for more details.

What are mycorrhizal fungi?

Mycorrhizal fungi partner with plant root systems. This creates a symbiotic relationship in which plants exchange sugars created during photosynthesis for trace minerals and nutrients from the fungi. Various fungi provide different nutrients to the plants.

Mycorrhizal fungi are made of a filamentous body called mycelium and branching threads called hyphae (hi-fee). Plants send out a signaling compound through their roots that attract the hyphae. The hyphae then penetrate the root cells and nutrient sharing commences. The fungi form storage structures inside some of the root cells and tiny tree-like structures called arbuscules. The hyphae have a limited lifespan and when they deteriorate, fatty acids, lipids, high amounts of calcium and other nutrients are made readily available to the plant to use where needed. Hyphae feed the plant internally as well as externally, forming a long extension of the plant roots for increased access to water and nutrients found outside the root zone.

Where do the fungi get these nutrients?

Fungi interact with other microorganisms for more carbon/nutrient sharing. Bacteria break down rock utilizing specific enzymes. The nutrients released from the fragmented rock are taken up by the fungi. Nutrients are also acquired from decomposing litter and soil pools. The fungi secrete an enzyme that simplifies the nutrients for easy absorption by the plant. They also turn organic matter into more stable carbon for plant use.

Other ways in which mycorrhizal fungi benefit plants.

Besides exchanging nutrients, fungi benefit plants in a variety of ways. Trace minerals exchanged with plants allow for the transformation of amino acids into complete proteins. Many insects lack the necessary enzymes needed to digest complete proteins. Therefore, fungi assist with pest resistance.

Another way in which plants benefit is through the fungal secretion of glomalin. Glomalin is what holds the soil aggregates together, improving tilth. Glomalin also represents 1/3 of carbon storage in all soil. Why is this important? Higher CO2 levels in the air stimulate fungi to produce more glomalin. This also allows hyphae to grow longer and help plants reach more water and nutrients when facing drought due to a warming climate.

To sum it all up, mycorrhizal fungi are vital to the health of plants. They help with pest resistance, enhance the plants ability to handle environmental stress, stabilize the soil, provide a means to sequester carbon and exchange those vital nutrients and trace minerals that build up the plants immune system.

How do we as gardeners help facilitate fungal growth?

The #1 thing we can do is no or limited tilling of the soil. These precious mycorrhizal networks of fungi and roots connect many different trees and plants in an area. They help move nutrients and water from areas where resources are high to where they are needed most. Taking a no-till approach leads to more fungi: better water absorption, less soil compaction and less organic matter needing to be added. Tillage

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deletes at least 1 percent of organic matter which is a lot when the ideal amount in soil is 5 percent. Other microbes are disturbed when tilling occurs, and bacteria can provide 11 out the 14 nutrients required by plants.

Alternatives to tilling.

Using a broad fork and a garden rake can gently break up the soil surface with minimal impact on fungi and microbes. Limiting tilling to the top 1-2 inches of soil is best. Sheet mulching is an easy way to prep a garden bed before the planting season. Sowing cover crops prior, between, in conjunction with or after growing food crops will maintain soil nutrients and the roots will aerate and break up soil. Keeping a cover crop planted as a living mulch or during the off season will keep most of the weeds at bay. And the fungi creating networks with these cover crops will be in the vicinity to provide nutrients to transplants and seedlings.

The benefits of natural amendments

Leaves- contain more biomass and minerals than animal manure. Leaves can be added to compost or chopped and used as a mulch.

Endomycorrhizal inoculum- easy to mix in with soil when growing seedlings. Once transplanted, the fungi will translate to the surrounding soil (not needed for brassicas).

Fermented compost teas- regular applications introduce more humus-oriented organisms. Easy to make using horsetail, comfrey, whole milk.

Ramial wood chips- long lasting fertility.

Azomite- highly mineralized, natural and safe.

Fatty acid sprays- essential to plant health and immunity when applied to soil or foliage. Pure neem oil (emulsified) also wards off fungal disease and disrupts the molting process in insects. Fish hydrolysate (Liquid Fish) is high in fatty acids and has more nutrients than fish emulsion. Spraying fatty acids and fermented plants stimulate the plants immune system before problems occur.

I hope you are enjoying having a complete newsletter you can either read in its entirety, print it out, or even save it on your computer.

I would appreciate any suggestions or comments. Just email realdirt.newsletter@gmail.com