



Gardening Resources & Tips from the MMGA

March 2024

Spring is just around the corner



As the vernal equinox ushers in the astronomical season on March 19th, it's time to gear up for early spring gardening. From pruning to picking up sticks/yard debris and fertilizing the roses, there's plenty to do before the soil is ready to plant cool season crops. Once daytime temperatures are consistently 50°F, it will be time

to clean out the perennial and mixed border gardens.

Fundamental for productive gardening is healthy soil; but what exactly is healthy soil? In this month's edition of *The Dirt*, learn how to build healthy soil in your garden and timely early spring tips:

- New learning topics! Registration opens March 1st for the **Summer Gardening Know-How Series**. See the article below for more details.
- Healthy Soil, Healthy Life! Learn "How to" build healthy soil for your garden.
- This issue our "Native Shrub of the Month" column features a native shrub that colonists used to make tea during the American Revolutionary War.

- Farming and fun: March's featured MMGA project garden provides fresh produce to two food pantries while volunteers learn, experiment, and have fun!
- Check out our timely tip for your March garden.

Happy spring! See you again on April 1st.

Dig The Dirt? Please tell your friends!

They can subscribe online [HERE](#).

New online educational topics!



Summer Gardening Know-How Series

Wednesdays, 7:00-8:30 PM

May 8, 15, 22 & 29, 2024

WHO SHOULD ATTEND: Gardeners with all levels of experience and lots of questions, new homeowners starting from scratch, garden rehabbers. Everyone can benefit from some Know-How!

LECTURES INCLUDE:

- Raised Bed Vegetable Gardening
- Growing Perennials
- Good Bugs, Bad Bugs
- Grow Raspberries

Virtual sessions include live Q&A time with speakers and a number of handouts to read in advance or revisit in the future.

Learn more and register

Registration now open!

QUESTIONS?

Email us at KnowHow@MassMasterGardeners.org

Dishing the Dirt: "How to" from a Massachusetts Master Gardener

How to create a supportive environment for soil microbes

This month's contributor, Lifetime Master Gardener Tony Bonanno, has been a Massachusetts Master Gardener since 2007. He designed, built, and oversees the Victory Gardens at the Veterans Community Health Care Center in Lowell and is the horticulture leader for the Concord Prison Outreach organization (CPO) supporting all prison programs and is currently involved with MCI Framingham teaching and running a volunteer program at the facility. Tony also chairs the Topsfield Fair Home Garden committee and is a Certified Massachusetts State Fair Judge.

Healthy soil is inextricably linked to human health, from the food we eat to the water we drink and the air we breathe. It is the foundation for a nutrient-rich, productive, and sustainable garden. It is alive: teeming with plant and animal life. Beneficial soil microbes perform a critical role in the soil including nutrient recycling, degrading crop residue, and stimulating plant growth.

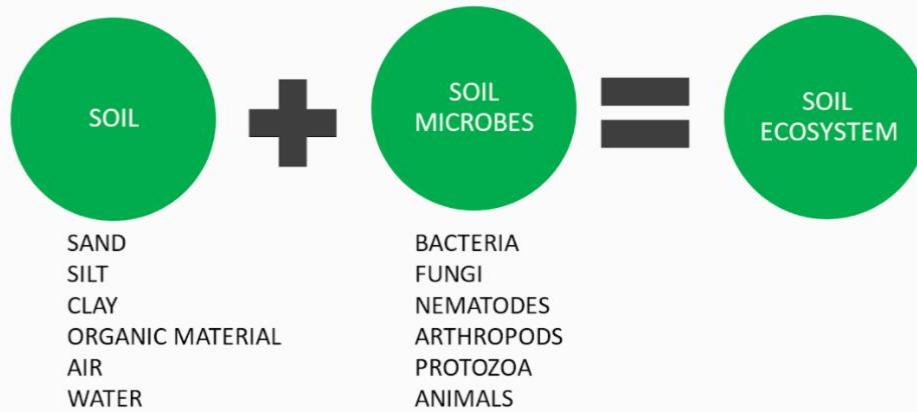
Understanding the soil microbe population and its workings can be a very complicated, involved subject. It is broad and multi-faceted. Experts in this field have dedicated decades of their lives to this topic, yet admittedly their expertise is confined to a limited portion of the subject. Couple this with the new scientific discoveries, and it is a formidable task to keep up. We study the Soil Food Web and get drawn in. There are so many moving parts, functions and relationships.

It can be confusing, but doesn't have to be. It's truly the elephant in the garden, but even an elephant can be eaten if we do it one BITE at a time.

CREATE A SUITABLE HOME FOR MICROBES

BITE #1: Get an accurate evaluation of your soil. What is the composition of your soil? Only a soil test can tell you. It is the only way to get a clear picture of any nutrient deficiencies or excesses. Ph level is important as it affects how nutrients can be made available to the plant. A S.O.M. (soil organic matter percentage) test is an indicator of the ability of the soil to support the microbe population. Use a reputable lab for your test so that you'll get recommendations to correct problems. Use the test results and correct any deficiencies.

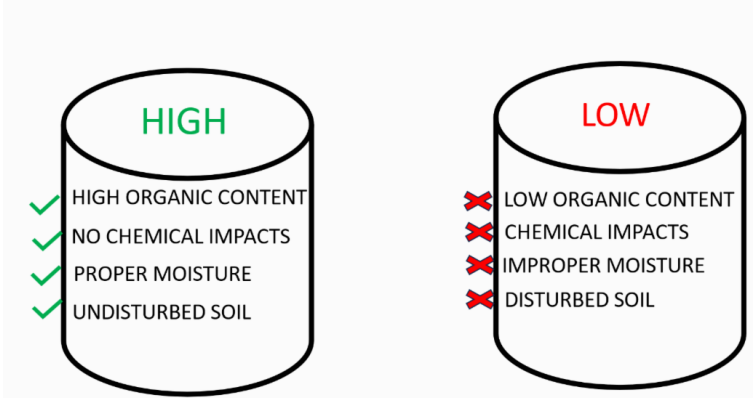
HEALTHY SOIL ECOSYSTEM



ASSESS SOIL MICROBE POTENTIAL

BITE #2: Assess your soil microbe potential. That is how large a microbe population the garden can support. Remember we are trying to create a healthy soil ecosystem. The key to attaining that goal is to have a robust soil food web, which requires a vigorous microbe population and a healthy supportive environment. Soil is usually at its maximum microbe capacity. Its microbe population is directly related to its ability to support it. The illustration below is a simple way to think about your soil microbe capacity.

SOIL MICROBE CAPACITY POTENTIAL



- We need to have sufficient **organic material** in the soil. Microbes need to eat, and carbon is their food of choice. Organic materials, especially compost, provide the nutrition they need. Organic mulches and cover crops also add to food supply.
- **Chemicals**, in the form of pesticides and fertilizers, upset the balance in the soil. They negatively impact the elements of the soil food web. In the long run, all they create is a need for more chemicals which exacerbates the damage already done. They must be avoided. Organic pesticides also can be harmful. Some are non-selective and harm the beneficial microbes.

- **Water** is necessary for microbes to survive; without it they die or go dormant. It is also the means for microbes to move about the soil. Too much water displaces oxygen that the plants need for respiration, creating an anaerobic environment and killing microbes.
- **Disturbed soil**, whether by over-tilling or compaction, loses its aggregation and subsequently its permeability. Water cannot penetrate, and this lowers the soil air-gas exchange. Carbon dioxide is the product of organic material decomposition. It is generated in the microbial pandemonium going on in the soil food web. All that CO₂ from the organic matter being decomposed and the predator/prey eating and excreting has to be exchanged with oxygen to keep the soil aerobic. A general rule is aerobic soil favors the beneficial microbes and has a detrimental effect on the pathogenic varieties.

PRACTICE REGENERATIVE GARDENING



BITE #3: The picture above is my version of Regenerative Gardening principles tailored to the garden. Farming is different from gardening. While the end objective is the same, the methods differ based on the scope and scale of the operations. If we follow these principles, it will build the foundation allowing the microbes to do their job.

Leave the roots

One aspect of building the foundation we haven't addressed is maintaining living roots in the soil. During the life of the plant, it builds a large microbial community in the rhizosphere, the area immediately surrounding the roots. The plant provides microbe food in the form of exudates and the plant



receives nutrients from the microbes in return. Instead of removing the entire plant, if we cut the plant off above the ground, leaving the roots intact and in the soil, we leave the microbial community functioning. When we replant, the thriving microbial community is ready to serve, giving the new plant a head start. This can be a fall vegetable crop or a cover crop.

Microbe Population - If we build it they will come!

We know that the microbe population is dependent on the soil microbe potential or its microbe capacity. Microbe levels quickly reach the capacity of the soil. They are extremely prolific and will rapidly achieve capacity. Some bacteria double every 20 minutes. Feeding them compost, which contains a healthy microbe population, should be all that's needed as an inoculant. If we follow my five Regenerative Gardening principles, our soil should be at maximum microbe capacity in short order.

Biopriming

Biopriming is adding microbes to an established garden. One familiar addition is using rhizobia inoculants for legumes. Rhizobia bacteria increase nodulation and nitrogen fixation pictured in the soybean roots to the right. Mycorrhizal fungi are another commercially available additive. In particular, AMF, arbuscular mycorrhizal fungi are widely hyped. These fungi insert their hyphae into the root cells and transfer nutrients intracellularly to the plant in exchange for exudates. Their hyphae expand the root mass, increasing nutrient and water availability to the plant.



There are caveats regarding commercial additives:

1. *Viability - These inoculants are living tissues. They are susceptible to heat and cold. They also have a shelf life. Where and for how long they've been stored is critical to their viability.*
2. *Compatibility - The selected inoculant must be compatible with the plants being grown. An example is using an AMF on brassicas. Brassicas will not form a symbiotic relationship with them. Similarly, using rhizobia on non-legume crops is ineffective. Species from a non-related climate or from a different soil type should be avoided. Foreign species may compete with the native species and not be able to get established.*
3. *Validation - How do you know they worked? If they didn't, why not? Did you really need them?*

In closing, I've tried to encapsulate an extensive subject in three "bites." I hope this encourages you to further explore this fascinating topic. The garden

is a living entity; treat it as such. Protect it, feed it, and let it perform its functions unimpaired by negative human intervention. It works for me.

Native Shrub of the Month

New Jersey tea, *Ceanothus americanus*

New Jersey Tea is an attractive low maintenance native shrub that provides showy blooms during the summer months, while providing support for a multitude of pollinators.

Ceanothus americanus is native to Eastern and Central North America and grows in sandy or rocky areas, including dry meadows and rocky slopes. The common name stems from the fact that its leaves were used as a tea substitute during the Revolutionary War.



This compact shrub grows to about three feet tall in a mounded habit and can be used to form a low growing hedge. It prefers full sun and is known for its ability to thrive in very dry soils. The plant has deep taproots that fix nitrogen in the soil, giving rise to another common name, New Jersey Red Root. The deep taproot makes it a good choice for rocky hillsides and slopes but creates problems with transplanting once it is established.



Fragrant white, showy flowers appear in May and can persist into July, providing an excellent nectar source for numerous butterflies, hummingbirds, beetles, wasps, flies, and bees. Its dark green oval leaves support caterpillars of dozens of moth and butterfly species, and it is a host plant for the Spring Azure (pictured) and the Summer Azure butterflies.

DON'T MISS the articles below. If they appear chopped off, just follow the instructions in the lower left hand corner of this email and click on the link that says "View entire message."

Visit an MMGA Project Garden

Growing for food pantries, learning and having fun

Marlborough Food Pantry Garden

Approx. [160 White Pond Road](#)
[Hudson, MA 01749](#)

FOR MORE INFORMATION

<https://www.facebook.com/CapassoFoodPantryFarm>

*For 2024, **The Dirt** will feature some of the project gardens where Massachusetts Master Gardeners volunteer. The gardens are in your communities, and we encourage you to visit, learn, and enjoy them. This month's garden profile is authored by Lifetime MG Gretel Anspach. Gretel won the MMGA Lifetime Achievement Award in 2016. In addition to managing the Marlborough Food Pantry Garden, a 20,000 square foot food production garden, Gretel is also the Chair of the Board of the Massachusetts Horticultural Society.*



I established the Marlborough Food Pantry Garden (also known as the Capasso Garden of Giving) in 2011 on land used with the kind permission of the Capasso family. The mission of the Food Pantry Farm is to grow as much useful produce as we can for the local food pantries while still having fun, staying solvent, learning things, and respecting the environment. “Useful” means produce that the food pantry clients want to eat, and that they do not have adequate alternative sources for. In a typical year we grow basil, beans, bok choy, carrots, cucumbers, lettuce, melons, okra, parsley, peas, peppers, radishes, summer squash, tomatillos, and everyone’s favorite: tomatoes. We harvest anywhere from 1,500 to 3,300 pounds in a season.

What’s wonderful about the garden is that it’s beautiful out there. The garden is in the middle of a field, surrounded by trees. The breeze ripples the grasses in the field, startling little brown birds that pop up and settle in the garden. Flights of swallows and dragonflies swoop over. Small herds of squash bugs

trundle from plant to plant, so even my “enemies” provide entertainment. I wish I had a better way with words to capture how much the farm lifts my spirits on (almost) every encounter.

We try to apply science to making the garden grow consistently or to even understand what happened. Why do we harvest twice the weight some years vs. others? Are we better off weeding the whole garden lightly every time we're out there (which means it needs weeding every time we're out there)? Or are we better off really weeding one area (which means it won't need weeding again soon but some other part of the garden is buried in weeds)? Should we plastic the paths, which is horrible because it's plastic, but it cuts by more than half the weeding we need to do? But if not plastic, then what? Why do tomatoes not grow in the first row of the garden when everything else grows fine there? Why do bush beans grow fine but pole beans do not?



We observe, we ponder, and we talk about it as we weed, plant and harvest, and occasionally leap up to look at a new bug. (Pictured, a dead tomato hornworm on a tomato vine.)

Sometimes we get an idea to try, sometimes we just decide to avoid the problem (we will no longer try growing tomatoes in Row 1). Sometimes we set up a science experiment to see if there's genuine mathematical

evidence between technique and result. We grow enough of each plant that we can set up comparisons on the best way to trellis tomatoes or fertilize beans. Sometimes we learn something, sometimes we just end up more confused, but we pretty much always learn something and have a good time.

We work the Food Pantry Garden Sundays, Tuesdays and Thursdays from 4-6 PM in season (generally May through September). The food pantry is open Monday, Wednesday and Friday, so this gives us the chance to bring the produce in fresh without having to worry about refrigeration. We don't work during a lightning storm (middle of a field, metal tools) but pretty much any other time.



I hope to see you out there sometime. All are welcome!

March GARDENING TIP



Increasing early spring snowdrops in the green. One of the first bulbs to appear in the late winter/early spring is snowdrops (*Galanthus* spp.). Their tiny, nodding, white flowers are a welcome sight. If you are looking to increase your stock of this tiny bulb, March is the time to do it.

One usually thinks of planting bulbs in the autumn and waiting for them to appear in the spring. Most think once they bloom and the foliage withers and dies, the next opportunity to increase the stock would be in another autumn planting, but in the case of snowdrops, spring is the time to increase the stock.

Here is how to increase the number of snowdrops in your garden:

- Wait until the flowers have bloomed and are starting to form green seed pods.
- Dig up the clump of bulbs.
- Carefully tease apart the white root system.
- Look for the point where the plant's leaves and stem go from dark green to very pale green or white. Replant with the pale green-white part below the soil. This is called replanting "in the green."
- Firm the soil and water around the newly planted bulbs.
- Part can be replanted where the original clump was dug and the others can be planted in small groups.



By replanting around the original planting, new plants will soon fill in and become a larger clump. You have now given the little bulbs (which like to be in damp — not wet— soil) a chance to spread out and drop their seeds. In a few years your yard will have drifts of snow drops to decorate the late winter garden.

Year-round MMGA Learning Resources

Have a gardening question? These MMGA resources can help:

Have a plant problem? Email our volunteers your questions...and they'll get back to you. Please include your name, phone number, and as much detail as possible, including photos.

- **Massachusetts Horticultural Society:** MHSHelpline@MassMasterGardeners.org
- **New England Botanic Garden at Tower Hill (Formerly Tower Hill Botanic Garden):** Hortline@NEBG.org

Speaker's Bureau: If you're a member of a garden club or other organization, check out our lecture topics [here](#). If you need information on how to schedule a talk for your group, contact our Speakers Bureau Manager at Speakers@MassMasterGardeners.org.

Seasonal MMGA Learning Resources

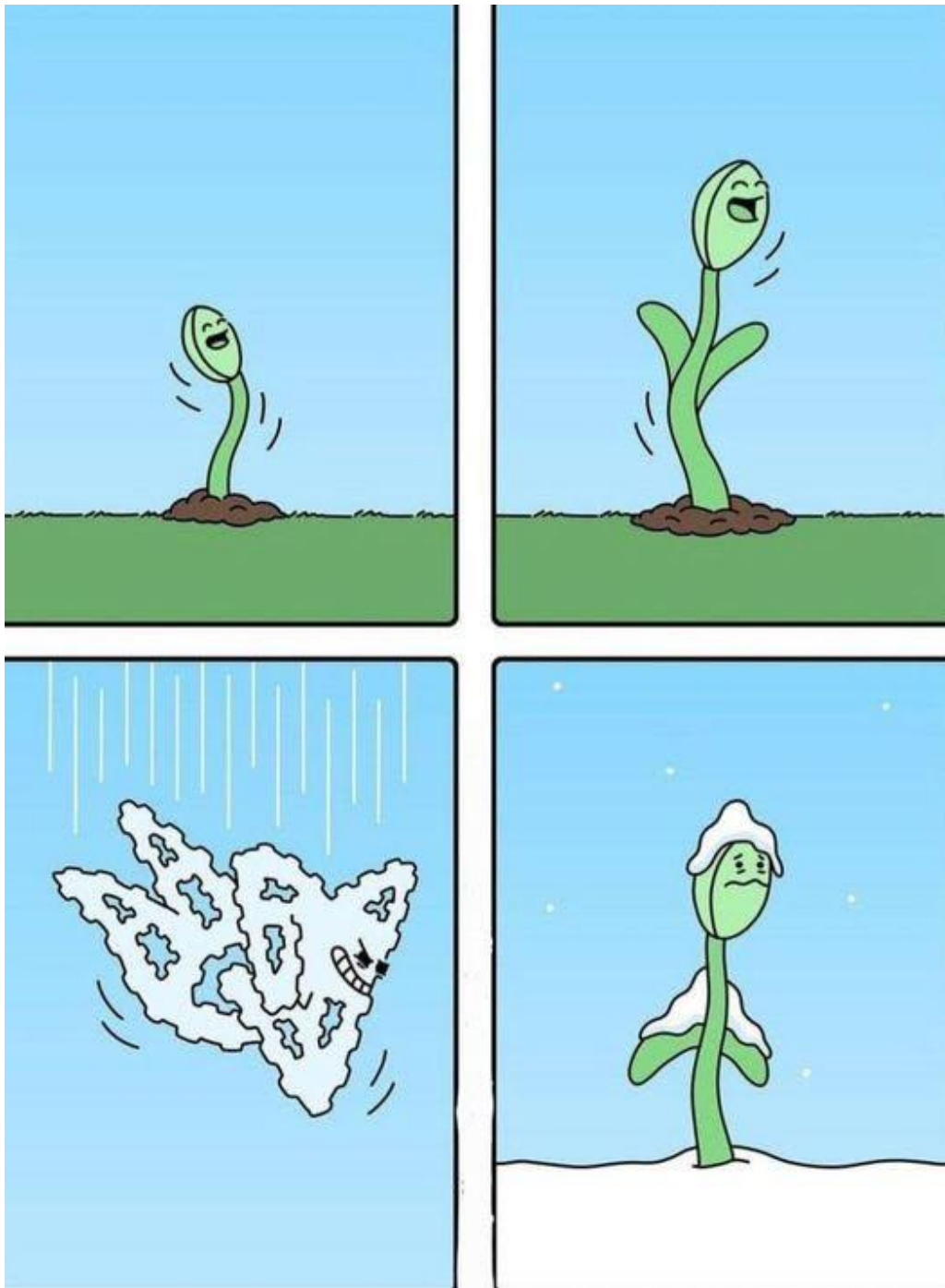
Ask us your questions in person! Trained volunteers staff Ask-a-Master-Gardener (AAMG) tables at dozens of events each year.



- The AAMGA is coming to a community near you this spring-check our [AAMG Calendar](#) in a few weeks.
- Belong to a local organization that would like to host an AAMG? Contact Outreach@MassMasterGardeners.org.

Why guess? Test! *Get your soil pH tested - for free!*

- Currently there are no soil testing clinics scheduled, but check our [Soil Testing Calendar](#) regularly as events move back outdoors.
- To request an MMGA Soil Testing event for your organization's event, contact SoilTesting@MassMasterGardeners.org.



This month's credits

PHOTOS:

- Pussy willow photo courtesy of Native Plant Trust
- Soil Microbe photos:
 - Health Soil Ecosystem, Soil Microbe Potential and Regenerative Principles courtesy of MG Tony Bonanno
 - Plants with roots courtesy of Hobby Gardens

- Photo of soybeans inoculated Rhizobacteria courtesy of University of Georgia Extension
- Photos of New Jersey Tea courtesy of Native Plant Trust
- Photo of Spring Azure Butterfly in Wareham courtesy of Massachusetts Butterfly Club
- Photos of Marlborough Food Pantry Garden courtesy of Gretel Anspach
- Photo of snowdrops in snow courtesy of North Carolina Extension Service
- Photo of snowdrops clump in hand courtesy eBay.

FEATURED ARTICLES:

- This month's "How To" article was authored by Lifetime Master Gardener Tony Bonanno.
- The featured MMGA project garden was written by Gretel Anspach, Lifetime Master Gardener.

REGULAR COLUMNS: The "Native Shrub of the Month" article was authored by Hadley Berkowitz, a Principal Master Gardener and landscape designer based in Metrowest. The Gardening Tip was provided by Kathi Gariepy, a Lifetime Master Gardener, lecturer and writer on gardening topics.

Who We Are

The Massachusetts Master Gardener Association is an independent non-profit organization whose mission is to share research-based horticultural knowledge and experience with the public. We meet that goal through Master Gardener Certification, outreach, education, volunteering, and public gardening programs for the advancement of best practices in sustainable, regenerative horticulture.



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