Cross Pollination

Newsletter of the Halton Master Gardeners

February 2022

February 'Garden To Do' List

Master Gardener Claudette Sims

- **Amaryllis -** Cut off spent flowers & stems. Allow leaves to grow in a sunny window; water only when the soil is nearly dry. Fertilize with a dilute organic fertilizer about once a month.
- **Houseplants -** Consult our December newsletter 'to do list' for detailed information on houseplant care & dealing with pests.
- **Orchids -** Trigger phalaenopsis orchid reblooming by providing a drop in temperature (17-18C for 2-4 weeks) & extra light. This Miss Orchid Girl video will show you how.
- **Seed Starting -** Use this Seed Starting Date Calculator to determine when to start your veggie seeds. Enter **May 17th** as our area frost date.
- **Find Seed Companies** from this extensive list at **Seeds of Diversity.**
- **Dormant plants/bulbs indoors**– Check cold stored bulbs or plants for rot or signs of disease. Spray lightly if dry or shriveled.
- **Blueberries -** Late February/early March, prune out dead, damaged, diseased wood if needed to an open shape to increase air circulation. Detailed pruning info here.
- **Watch** – How to Winter Sow Seeds for ideas on how to start cool weather crops and perennials outdoors in February or March. Use recycled materials to make it more eco friendly.
- **Bees** – Consider adding plants that support specialist bees in your garden from this extensive list. Specialist bees are not aggressive & rarely sting. Learn more here.
- **Bird feeders**– Keep bird feeders topped up for our winter residents or better yet, plan on adding some native plants that feed birds. ☺

How do you know when a gardener is tired of winter?

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The Hori Hori Knife - A Warrior's Tool!

By Halton Master Gardener Sheila Gutierrez

Digging into the Ultimate Gardener's Tool

Garden enthusiasts are raving about the only tool you need in the garden, the hori hori knife. Instead of lugging around trowels, hoes, and cultivators, gardeners are opting to carry a hori hori for its multi-faceted use and sleek design.
It is designed with a few key features including a depth measuring ruler in inches and millimeters, 7-inch concave rust proof stainless steel blade with a serrated and straight edge, and an ergonomic wooden handle. The best feature Is the leather sheath to secure its sharp edges. I really enjoy that the sheath has a clip, making it easy to carry on any bag or basket. There are many variations on the market today, but these are the key features that put this multi-purpose tool at the top of many gardeners' tool list.

Hori hori with leather sheath
Photo: Sheila Gutierrez

The Five Top Ways to Use your Hori Hori

- **Weeding** – A hori hori can be used as a weeder especially for those deep-rooted weeds that require more strength. The short wooden handle gives even more control to remove only the weeds and not harm your thriving plants.
- **Slicing through plant roots** – The serrated edge of this tool can cut through small branches and help divide clumping perennials and root bound plants. A badly root bound plant can be difficult to remove from the container. The long thin serrated knife is easy to slide around the edge of the container to help wiggle out the root ball.
- **Cutting twine and soil bags** – With a hori hori in my hand, I can effortlessly go from cutting the twine that supports dying tomatoes to cutting back stems with the serrated edge and the opposite smooth edge helps open tough bags of soil.
- **Seeding** – It is easy to dig shallow rows for seeding with this tool.
- **Transplanting** – The 7-inch steel blade is marked in inches and millimeters; gone are the days where I used my index finger as a depth measurement tool for seeding and transplanting.

Origins

Its sleek design is thought to be originally derived from a *Kunai,* originally derived from the masonry trowel (Putra Danayu, 2021). The low production costs of the Kunai make it a popular multi-purpose tool valued by many. It serves various sectors such as workers of stone and masonry and peasant farmers, and is even adapted as a basic hand throwing tool for martial arts experts. With a little bit of sharpening this tool was readily available for combat in clever ways such as trip wire and scaling walls (Mol, S., 2003). You can learn more about the Kunai's history in this book: Classical Weaponry of Japan

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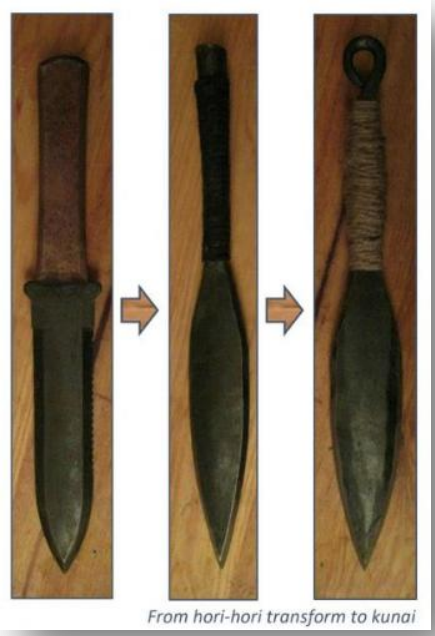
The Hori Hori Knife - A Warrior's Tool (continued)

By Halton Master Sheila Gutierrez



Hori hori transformed to kunai
Image: Sword: Tell about swords in human history

However, for gardening purposes, hacking at weeds may be as close as it gets to battle. At the end of your garden session a quick soak in water (not the wood handle) and a gentle scrub will deal with most of the soil deposit. Dry it off with an old towel or kitchen paper and give it a light coating of Vaseline, machine oil or Camellia Oil to extend its life and protect it from rust.

Adding the hori hori to your garden collection may not make you a martial arts expert but the role gardeners play in the fight against climate change, in our own backyards and communities must mean gardeners are indeed a little bit of warrior.

To Learn More

- Hori Knife Under the Solano Sun
- Sword: Tell about swords in human history
- Classical Weaponry of Japan: Special Weapons and Tactics of the Martial Arts
- Video - Hori Hori Japanese Gardening Knife Guide

Gardening Humour FB

Your Hori hori is likely also useful for Zombies!

Photo: Sheila Gutierrez

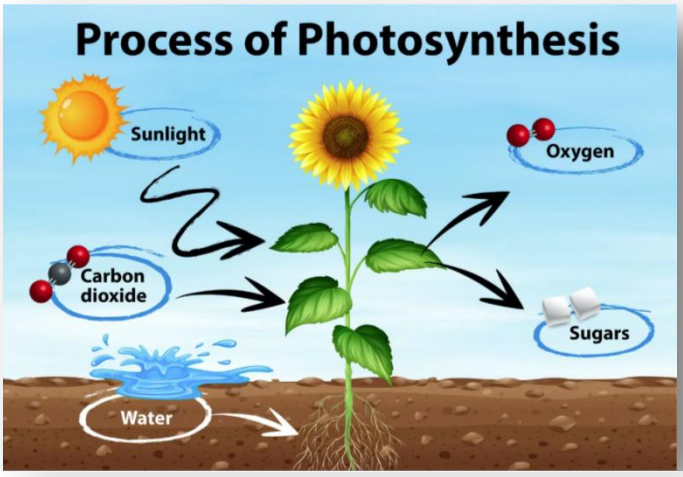
Cross Pollination

Feed me, Seymour! … a note on nitrogen fertilizers

By Halton Master Gardener Cathy Kavassalis

Do you recall the black comedy *Little Shop of Horrors* that came out in 1960? The main character Seymour purchases a mysterious plant which he names Audrey II. He soon discovers Audrey II feeds on blood- human blood…and well…whole people too! What is Seymour to do? After all, he loves plants, and some people...not so much.

Thankfully, we do not need to go to such lengths to feed our plants. In fact, most of our plants, if properly chosen can get the nutrients they need to thrive from their environment. So our job is to care for their environment - and ours. So what do plants need? To grow and reproduce, plants need to manufacture hundreds of different compounds. Using energy from sunlight, plants convert hydrogen, oxygen and carbon into starches and sugars. Photosynthesis is just one of many complex processes occurring in plants as they grow. All these processes require ingredients - chemical elements. Plants can obtain the carbon they need by absorbing carbon dioxide from the air through their stomata, pore-like structures on the undersides of leaves. Water is a critical element and is absorbed mainly through the roots along with most other elements. Caring for soils or growing media is caring for plants.



Elements required in large amounts are called **macronutrients.** These include: nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), sulfur (S), magnesium (Mg), carbon (C), oxygen (O), hydrogen (H). **Micronutrients** (or trace minerals) are equally important but smaller quantities are needed. These include: iron (Fe), boron (B), chlorine (Cl), manganese (Mn), zinc (Zn), copper (Cu), molybdenum (Mo), nickel (Ni).

Different plant species require different amounts of these various elements. Plants have evolved a wide range of ways to extract them from their environments:

> "These mechanisms include changes in the developmental program and root structure to better "mine" the soil for limiting nutrients, induction of high affinity transport systems and the establishment of symbioses and associations that facilitate nutrient uptake. Together, these mechanisms allow plants to maximize their nutrient acquisition abilities while protecting against the accumulation of excess nutrients, which can be toxic to the plant," (Morgan, 2013).

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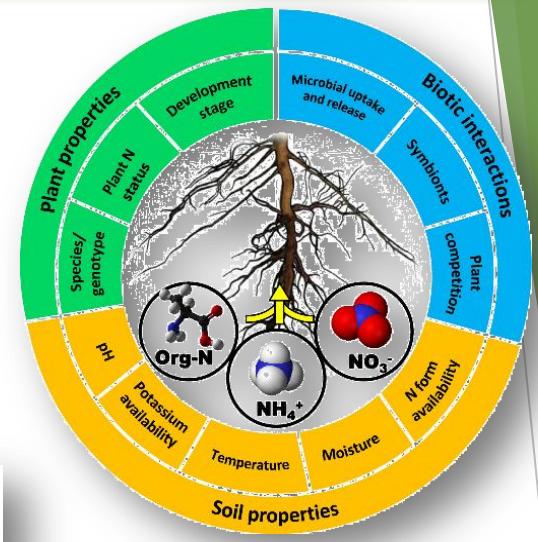
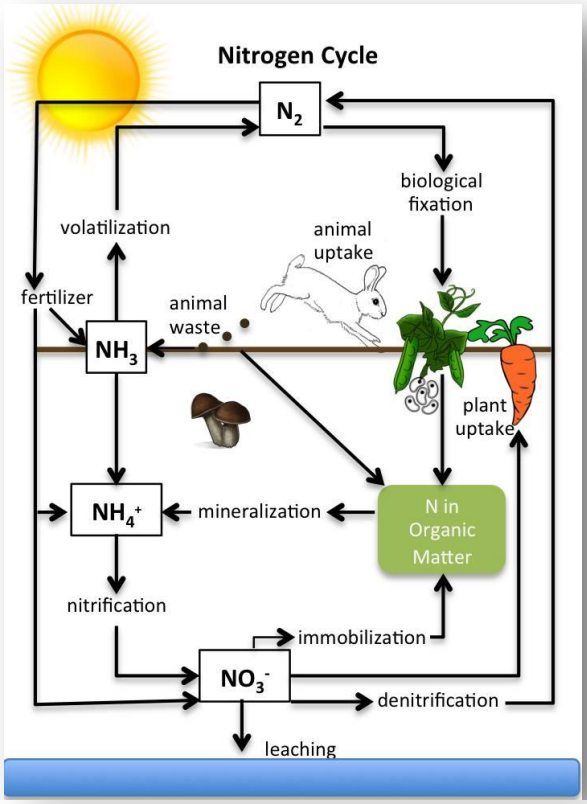
Feed me, Seymour! … a note on nitrogen fertilizers

Macronutrients can be broken into two groups: primary and secondary nutrients. The primary nutrients are nitrogen (N), phosphorus (P), and potassium (K). You will recognize these on the labels of fertilizers and soil amendments (N-P-K). By supporting a healthy soil food web, we can help ensure that these naturally abundant elements are available to our terrestrial plants.





Let's look at just one of those - **nitrogen** (N). This element is needed most by plants. It is essential for the synthesis of amino acids, proteins, DNA, as well as chlorophyll, which gives plants their green colour. Gardeners don't need to know the chemistry here, but do need to understand that plants have to manufacture hundreds of different nitrogen containing compounds. Even though gaseous nitrogen (N_2 - two nitrogen atoms bonded together) is abundant in air all around us, plants can not use it in that form. They must rely on natural processes and soil dwelling organisms, or synthetic fertilizers to acquire nitrogen in a form they can use, like ammonium (NH_4+) or nitrate (NO_3). I know some of you are fading out on me, but bear with me!

For millennia, an incredible diversity of organisms in our soils, including bacteria, algae and fungi have evolved relationships with plants. Some of these organisms decompose organic compounds found in plant residue like fallen leaves and logs, animal droppings or dead animals. **Decomposers** produce ammonium ions (NH_4+), which can be used by plants and other organisms. Some other microorganisms, termed diazotrophs, are able to remove gaseous nitrogen (N_2) from the atmosphere and convert it to ammonia. This can indirectly be shared with plants (when they die and release it), or can be directly shared through symbiotic relationships. Nitrogen fixing organisms, such as rhizobium, colonize certain plant roots (e.g. legumes like peas and beans) and provide those plants usable nitrogen in exchange for carbohydrates. To ensure our garden plants have access to nitrogen in a form they can use, it is essential to ensure a healthy soil food web. This is why we encourage you to cycle plant material in your garden. Organic matter is essential to support microbial health.

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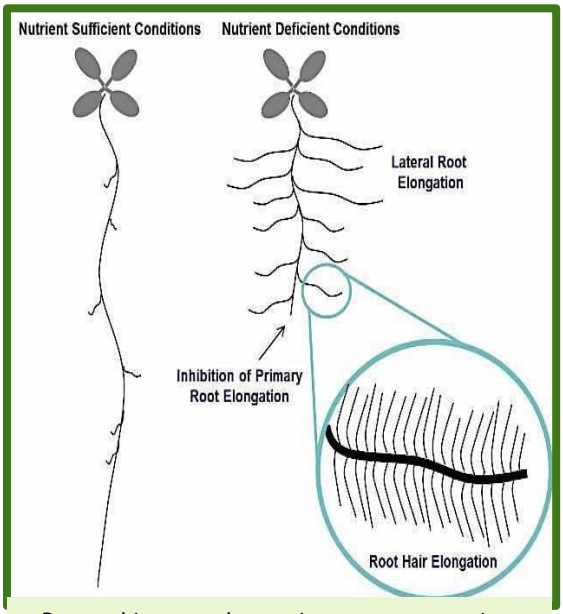
Feed me, Seymour! … a note on nitrogen fertilizers



Root architecture changes in response to nutrient deficiency.

Soils can become depleted of usable nitrogen, or soil conditions can make nitrogen difficult for plants to absorb (e.g. pH, temperature, moisture, clay mineralogy). If plants are failing to thrive, stunted or yellowing, this may be symptomatic of nitrogen deficiency. Correcting the conditions that are contributing to the problem should be the goal, but amendments can be added in the short term. Soil amendments like blood meal can provide nitrogen. We can guess that Aubrey II was heavily dependent on nitrogen, hence the "Feed me, feed me, Seymour!" Fish meal, bat guano, alfalfa meal and to a lesser extent composted manures can also provide nitrogen (check labels). Leguminous plants can also be used as green manures and worked into soils in vegetable gardens. Commercial fertilizers are widely available to correct problems but should be used with an abundance of caution. Soils should be improved and plant choices made so their use can be reduced and where possible eliminated. Why? Overuse and misuse of fertilizers presents a serious environmental threat to soil, water and air quality. Excess reactive nitrogen directly affects species composition, diversity, dynamics, and the functioning of terrestrial, freshwater, and marine ecosystems. The consequences of excess reactive nitrogen include:

- Acidification, eutrophication and hypoxia (oxygen depletion) of soils and adjoining water-systems
- Leading to harmful algae blooms and or biodiversity losses in terrestrial and aquatic ecosystems
- Ozone-induced injury to plants and regional haze. (Ozone -O_3) is created by a chemical reaction between oxides of nitrogen (NO_x))
- N_2O is a potent greenhouse gas leading to global climate change and is also involved in the destruction of the ozone layer
- Nitrate contamination of drinking water

Our goal as gardeners is to raise and care for our plants in an environmentally sustainable manner. That means learning to work with your soil and working to improve soil health, particularly supporting the microbial life in our soils

I will write about other nutrients another time! HMG Cathy Kavassalis

References:

- Plant-Soil Interactions: Nutrient Uptake. Nature Education Knowledge
- Technical Report: Human Alteration of the Global Nitrogen Cycle: Sources and Consequences
- Human Alteration of the Nitrogen Cycle and Its Impact on the Environment
- Nitrogen in Agricultural Systems: Implications for Conservation Policy
- Learn more about soil food webs here: https://www.nrcs.usda.gov/.../main/soils/health/biology/

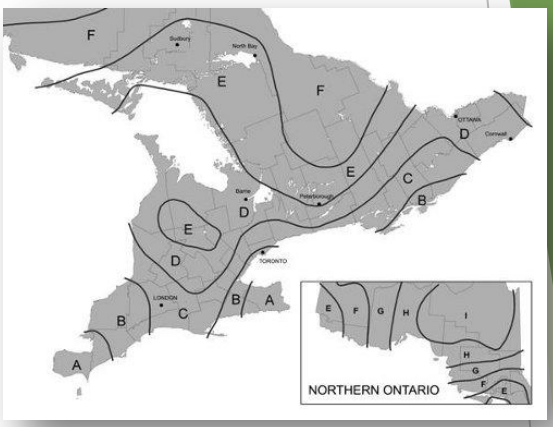
Cross Pollination

Question of the Month

"I start my vegetable seedlings inside every year but still don't have strong hardy plants to go into the garden. I'm not sure what to do differently." Stacey A. MGOI FB

When to plant depends on where you garden in Ontario. The most important thing is to look at your **approximate last frost date** for when you can transplant outside. If you start plants too early, they can get leggy and lax and will be setback. Start by checking the OMAFRA website to determine the last frost date for your region.

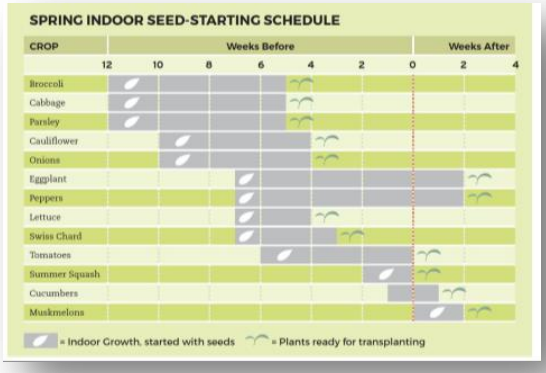
Create a chart using weeks for the columns, working backwards from the last frost date. (See the square foot gardening tool below). Add your list of vegetables along the rows and using one of the attached resources, determine how many weeks before the last frost each of the seeds should be planted.



There are many online sites that provide calendars, or you can make your own. Take the list of what you would like to plant and make a little chart for your area.

Online Tools:

- OMAFRA Frost Dates
- Seed-Starting Date Calculator
- Square Foot Gardening
- Vesey's Seeds Vegetable Planting Guide



Square Foot Gardening

Table 1. Average Frost-Free Period in Climatic Zones of Ontario (1976-2005)

Zone	Frost-Free Period (Average in Days)	Average Date of Last Spring Frost	Average Date of First Fall Frost
A	170-190	April 25	October 20
B	160-170	April 30	October 13
C	150-170	May 3	October 8
D	130-165	May 11	October 1
E	125-145	May 17	September 26
F	115-125	May 24	September 22
G	100-115	May 27	September 17
H	100-110	June 3	September 16
I	90-100	June 7	September 9

OMAFRA - Frost Date Zones

Cathy Kavassalis - Halton Master Gardener

February 2022

Image: Gardening Humour FB

Halton Master Gardeners: Out & About!

By Halton Master Gardener Kirsten McCarthy

Master Gardeners aim to help gardeners everywhere through offering advice, resources and sometimes by helping with the grunt work!

October 2021

With inspiration from Action 13 and Community Permaculture Lab in Dundas, ON, Halton Master Gardener Lynn Courtney and Master Gardener in Training Kirsten McCarthy participated as lead gardeners in a fall pollinator garden planting bee at St. Mark's Church just outside downtown Dundas. The 100' x 3' garden bed was prepared earlier in the summer and with the help from many generous donations of native seedlings and plants, community volunteers enjoyed a lovely early October morning together.

New members to our group start out as *'Master Gardeners in Training' & usually work along with a certified Master Gardener. MGiT Kirsten on the left and MG Lynn Courtney on the right.*

After the bed was filled with native plants, a sign was designated to bring awareness of the new community native garden. Community plant and environmental enthusiasts set up tables for volunteers to learn about and swap seeds, how to reduce waste, and cold stratification through storing seeds in the fridge and winter sowing. The event also unveiled the Official grand opening of St. Mark's seed library, the first of 5 seed libraries in Dundas.

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Cross Pollination

Halton Master Gardeners: Out & About! (continued)

By Halton Master Gardener Kirsten McCarthy

Halton MGs Lynn Courtney, with MGiTs Kirsten McCarthy and Jean Jacobs were invited by Action 13 and Community Permaculture Lab to a native planting event at Ellen Osler House in downtown Dundas. The large garden bed was filled with generously donated native shade plants to help increase biodiversity in the garden and bring awareness to pollinator friendly gardens. Winter sown jugs of native seeds were created and placed in a sunny location to await germination in the spring.

We can't wait to see these beautiful gardens next spring!

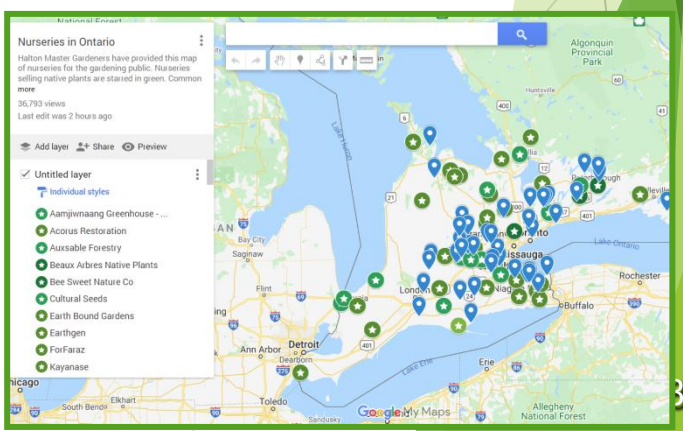
Plant Lists Courtesy of In Our Nature Native Plant Nursery

The Best Native Plants for Dry Shade:

- Large-flowered Bellwort (Uvularia grandiflora)
- Barren Strawberry (Waldsteinia fragarioides)
- Spotted Geranium (Geranium maculatum)
- Bottlebrush Grass (Elymus hystrix)
- Largeleaf Aster (Eurybia macrophylla)
- Zigzag Goldenrod (Solidago flexicaulis)
- Canada Mayflower (Maianthemum canadense)
- Wild Ginger (Asarum canadense)
- False Solomons Seal (Maianthemum racemosum)
- Pennsylvania Sedge (Carex pensylvanica)
- White Wood Aster (*Aster divaricatus)*
- Woodland Sunflower (Helianthus divaricatus)
- Purple Flowering Raspberry (Rubus odoratus)

- **Ontario Native Plants For Shade** by Season
- Native Groundcovers
- Native Asters for Ontario Gardens
- Native Milkweed for Ontario Gardens
- Native Goldenrods for Ontario Gardens
- Native Plants for Hummingbirds
- Native Grasses for Ontario Gardens
- Low Growing Native Shrubs
- Native Alternatives to Invasive Plants

See our Map of Nurseries in Ontario for an extensive list of both native plant and independent nurseries! Native plant nurseries are marked by green stars!



Cross Pollination

"What's Growing On?"

Halton Master Gardener Meetings continue to be held virtually until further notice. We are still accepting new members! Our next meeting will be Wednesday, February 2nd. Interested? Email us!

We do hope to be back to in person meetings, advice clinics and events later in the year!

February 2022

Seedy Saturdays are '*Virtually*' Everywhere!

To see listings of all Seedy Saturday events in Ontario go to: Seeds of Diversity

HAMILTON SEEDY SATURDAY

- Virtual Seed Swap Form
- Workshops occur each Saturday in February
- Watch for: Halton MG **Kathleen Livingston,** Feb 5th 4:00 P.M.- 5:00 P.M.

HALTON GARDEN WEEK
VIRTUAL GARDENING EVENT

HALTON GARDEN WEEK VIRTUAL EVENT!

- Celebrate spring and gardening
- Registration is free!
- See their list of speakers

Click on link to register for these FREE events

Tending Nature Webinars

- Feb 4th Heather Holm: Bumble Bee Banquet: Selecting Native Plants for Bumble Bees
- Feb 11th Debra Knapke: Native Plants in My Garden? Absolutely!
- All webinar recordings will be posted on the Tending Nature website