

September/  
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# Root Concerns

Notes from the underground

## They've Got It Covered!



This year at the Rensselaer County Demonstration Vegetable Garden, Master Gardener volunteers tended alliums such as garlic, onions and leeks.

The garlic and onions produced well and after harvesting in late July we had mostly bare plots. We could have left them alone and let the weeds and dill take over. The heavy rains could then wash the soil away. Or, we could plant cover crops to hold and improve the soil.

Figuring out which crop to plant, when the best time to plant it is and how it can affect the soil is a little daunting. But we decided to grow as many of the suggested crops as we could get seeds for. We planted fava beans, daikon radish, red clover, oats, buckwheat, field peas and 2 beds of green beans. One of the beds of beans was treated with inoculant, and one was not.

Different plants provide different benefits. For example, legumes such as peas and beans work together with nitrogen fixing bacteria in the soil called rhizobia. The rhizobia take nitrogen gas in the soil and sort of break it down and feed it to the plant roots. When the plant is then cut down and mixed in with the soil, it will add more nitrogen that other plants can then use.

Daikon radish grows long slender taproots as long as 2-3 feet. The roots reach down and pull trace nutrients out of the soil and then bring them up, storing them in the leaves and roots.

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Text and Photos by Rensselaer County Master Gardener Nancy Scott



When the plant material decays, those nutrients are now available for more shallow crops. If left over the winter, the roots will rot out leaving vertical spaces for air and water to penetrate.

Buckwheat grows quickly, crowding out weeds, providing flowers for pollinators and other beneficial insects. When cut down and allowed to decompose before it sets seeds, it becomes a green manure that adds humus, while the roots help hold the soil.

You might be asking now-how this could help me, the home gardener? Most of us have little space for a huge crop of something. We cram every space with plants, but there are times when a cover crop can be used. For example, an over-wintering or very early cover crop could be planted in areas that won't have vegetables like squash or tomatoes until late May. The crop would get turned under in the spring and allowed to decompose before planting. In the early fall, as in the Demonstration Garden, when earlier crops are done, a cover crop like peas can be planted to choke out weeds, and add more organic matter and nitrogen to the soil. And if they have a chance to flower can provide food for pollinators. Their vibrant

green also looks beautiful against the fall colors.

Just one caveat- I would say that if you are a very laid back kind of gardener, sowing cover crops might not be the best thing. You do need to keep track of them. For instance, not cutting back the buckwheat before it sets seeds might ensure that you have buckwheat coming up all over at a later date.

So if you have some time, please stop by the Demonstration Garden at the Parker School in North Greenbush and have a look.

## “Roots In The Groun” - A Cover Crop Tune

It's always soil improvement time but Fall offers some special opportunities. We could call this, “Roots in the Groun’, all the year Roun”.

It's fall and plants are drying up. They've done their job producing all kinds of stuff. The compost pile is beckoning after soaking up months of heat, sun, rain and nitrogen from the air. Their next task is being a nitrogen provider to next year's crop.

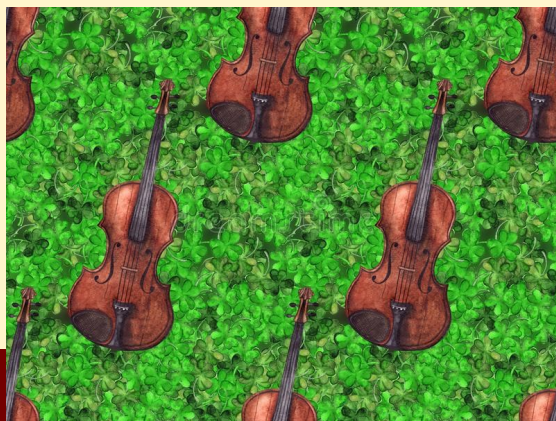
Now with last season's residue cleared from your garden, lightly till the top few inches of soil and sow a cover crop of rye, vetch, buckwheat, maybe a legume and walk away. Easy, so you

can get some rest, too.

Cover crop develops roots and shoots. Leave them in the ground all winter. Roots protect soil from the erosion of winter rains and winds while they keep good company with the worms and other soil inhabitants. A friend recently reminded me that buckwheat also attracts bees, a wonderful and much needed environmental bonus.

In spring, till it all under where it will add much needed organic matter to enrich the soil. And look forward to better nutrition ...soon.

Now that you've done the right thing with your garden, it's time to break out the fiddle. Hey, anybody have a tune for, “Roots in the Groun”?



# MORE BITTER THAN SWEET

Imagine an ornamental plant which grows quickly, with no insect pests or fungal diseases. It produces highly attractive orange fruits in fall, perfect to pair with pumpkins and mums. It requires no watering or fertilizer, grows in any soil, and thrives in sun or shade. And best of all, deer don't eat it! Did these positive qualities run through someone's mind as they brought the first plants of oriental bittersweet to the United States in the 1860's? Certainly they couldn't have foreseen that this plant would grow into the environment-changer we live with today.

Once you know oriental bittersweet, you'll find it's just about everywhere in our part of the Hudson Valley. It's a vine that can climb sixty feet or more into the trees, sometimes pulling them down as it spreads. It grows on top of less aggressive vines, such as native Virginia creeper, smothering them, too. It also forms dense thickets, leaving no room for woody plants or wildflowers to survive or regenerate. It turns the landscape into a mass of indistinct, foliage-covered forms, making things look strange and degraded. Oriental bittersweet covers natural places, like Schodack Island State Park and Papscaenee Island Preserve. Its abundant



in cultivated landscapes too, often seen growing up chain link fences in the city and scaling spruces in the suburbs. I'm pulling up seedlings like crazy at my place, trying to hold a line in the shifting sand.



A known problem in more than 33 states and covering thousands of acres nationally, how did oriental bittersweet become such a success? A combination of traits make it bigger, faster and stronger than virtually anything in its path. There are both male and female plants, as well as plants that bear both male and female flowers. Abundant seeds are produced in fall, and these seeds are highly attractive to birds and small animals. Migrating birds may retain what they eat for more than a month, so bittersweet seeds consumed here may be deposited hundreds of miles away. Seeds germinate readily, grow quickly, and seedlings can produce flowers and seeds after just a year or two of growth. Oriental bittersweet has hybridized with native American bittersweet to the point that scientists fear the native will become extinct. Vines touching the ground can root and spread further, and cut vines re-grow quickly. Climate models suggest

that Oriental bittersweet is likely to benefit from warming temperatures and increasing precipitation in the Northeast, where it is predicted to increase and spread northward (watch out, Canada!). And perhaps most cleverly, o.b.'s fall fruits are eye-candy to humans, who pick it, use it for their seasonal décor, then discard it in the backyard, aiding its march onward. Truly, this is a cockroach-bedbug-Norway rat of a plant.

So is there any hope? It seems unmanaged natural areas will be increasingly covered with oriental bittersweet indefinitely, making native woodlands invasive species ghettos. In your own backyard, pull, dig and remove it any way you can. Keep calm and garden on.



**TEXT BY DAVID CHINERY**

# QUIET ABOVE, TROUBLE BELOW

All I wanted was some new photos for my lawn talk, but I got a bit more than that. Since my pictures of looking in a lawn for grubs date back to the film era, I headed into the backyard with my digital camera to get some new-century shots. Scouting for grubs involves cutting out a one square foot section of turf, turning it over, and pawing through the soil in search of larvae. Due to the droughty summer and my weedy lawn, I wasn't expecting much, but a grub soon appeared; then more, and still more. I stopped looking and counting after I had 13 Japanese beetle grubs writhing in a yogurt cup. While a few grubs are of little concern, over eight per square foot can cause serious damage. Lawns with high grub populations can turn to barren fields by spring. This excited my inner entomologist while nauseating the horticulturist.



If you've somehow gotten this far in life and don't know grubs, here's the scoop. Grubs are the larval stage of beetles, including Japanese beetles, Oriental beetles, and European chafers, the three most popular characters in the Capital District. The adult mom beetles lay eggs in August, which quickly hatch into grubs. The grubs are white, C-shaped, have six legs on the front end, and a brown head capsule. They voraciously devour the roots of grass plants. They survive winter underground, eat a little more in the spring, pupate, then emerge as the next generation of beetles in late June or early July.

Crafting an action plan for an October gaggle of grubs is a head scratcher. Beneficial nematodes, tiny eel-like creatures which can enter a grub and regurgitate a toxic bacteria, can provide good control in some instances, but are expensive and picky about their environmental conditions, making deployment a challenge. A new nematode, developed by Rutgers University and given the scientific moniker *Steinernema scarabaei*, promises to be larger, hungrier, and easier to use. Unfortunately, it is hard to find for sale, at least right now. Another option, a "good guy" bacteria called *Bacillus thuringiensis* variety *galleriae*, which I'll call Btg, has also recently come onto the lawn care scene. Once the Btg is injected by a grub, it produces a protein which causes the grub to starve to death. Btg controlled 70% or more of the grubs in trials at the Ohio State University, and it is sold under the name GrubGONE. Unfortunately, Btg is better used in August or early September.

That leaves us with lawn insecticides, with perhaps the only choice those labeled "fast-acting," since most of the others move too slowly into the soil to grub-level. But if you abhor the chemical route, there is always the "do nothing" option. Right now, moles are dining on the grubs in my backyard, and they might be joined by birds or skunks. If it turns into a feeding frenzy, the lawn will look like a fraternity house on Sunday morning, and I'll be re-seeding next spring.

**TEXT AND PHOTO BY DAVID CHINERY**

# Taken With *Turtlehead*

It was a little scrap of a plant which no one wanted that May evening. The dust had just cleared, literally, at the end of the Master Gardener Plant Swap, a night when all sorts of containers, trays, milk jugs and beer flats come into the Extension office loaded with a huge variety of plants. The crazy spreaders are there, such as goose-neck loosestrife and obedient plant, as well as the vigorous self-sowers such as perilla and flowering tobacco. Amongst the thugs, however, there were some gems like Margaret's Japanese maples and Frank's choice hostas. The big thrill is getting some neat plants for free.

I certainly could understand why the plant in question was left abandoned - the three leaves in a blob of dirt in a paper cup were not attractive - but if the label, stating simply *Chelone*, was true, this was a superior native deserving a good garden home.

At my place, small, ailing or experimental plants live in containers next to the greenhouse in the convalescent zone. They are watered daily with a dilute solution of fertilizer and given their choice of sun or shade. This VIP treatment produces great results, and when large enough to compete in the real garden, the healthy patients are transplanted.

The mystery *Chelone* took to this treatment immediately, and soon produced several stems covered with dark, healthy leaves. I became convinced its tag was correct - it was a turtlehead, but which species? Gardening books claim there are three native to the eastern US. *Chelone glabra* has white flowers, which are sometimes flushed with pink. *C. lyonii* has pink flowers and wider leaves with coarser teeth on the edge, and has the biggest native range. *C. obliqua* is similar, too, but has a shorter petiole (the stem that connects the leaf blade to the main stem) and lives in wetlands. Since mine has bloomed, I am pretty sure I've got *C. lyonii*.

All of the turtleheads like dampish soil, part shade to sun, and grow two and four feet in height. Given a site to its liking, a turtlehead plant can grow into a large clump in three to four years. It is beset by few problems, other than occasional powdery mildew, and can be pinched in spring to create a bushier plant.

Even though it is a native, turtlehead is suitable not just for a woodland or streamside garden, but also perfectly fine in a perennial garden featuring some of the fanciest European and Asian hybrids. Interestingly, plant breeders seem to have ignored this genus, as there are few cultivated varieties for sale.



# Chipmunks Drive Me Nuts!



It's easy to dislike most garden pests, including spittlebugs (ick!), slime mold (yuck!) and jumping worms (ew!) The rub comes when the pest is cute, and not much is cuter than a chipmunk. A chipmunk or two can add animal color to a garden – they screech, I jump, and I swear they laugh – but my tolerance decreases as their population increases. Yet who but a real jerk could hate a chipmunk?

So that's the rub. But I do have some facts on my side. Chipmunks invaded my large planters and uprooted the transplants repeatedly, killing a couple of coleus at \$6.95 each. After my sweet corn germinated, the chipmunks pulled up each seedling and ate the withering seed and expanding roots. I blamed the deer for sampling the tomatoes, but that turned out to be the chipmunks. I wouldn't mind sharing, but why do they have to take a bite out of each ripe tomato, then leave the remains to rot,

and sample the green ones, too? They're taking their cheeky behavior a bit too far.

2020 first gave us a lot of nuts (I'm referring to the type from trees) and then an abundance of chipmunks. Wildlife biologists tell us that two to four chipmunks normally inhabit each acre, but the number can sometimes climb as high as ten. Each has a home range of about half an acre, and defends a perimeter around its burrow of about 50 feet. The burrows can extend through the earth for up to 30 feet, and are not marked by piles of soil, since chipmunks cleverly carry the dirt away in their cheek pouches, concealing the construction. A chipmunk mom can give birth to two batches of babies per year, each containing two to five baby 'munks.

If you've endured their damage, you might dream of a chipmunk-free garden, but that is probably unrealistic. Authorities recommend against having a continuous planting of trees, shrubs and groundcovers from wooded areas to around homes, and say to remove rock walls, deep mulch and wood piles, since these are great hiding places. A plant-free, gravel area should surround the house. While all this sounds great in theory, it isn't easy to put into practice, and I don't want to live in a parking lot. So, I'm learning (and re-learning) to tolerate chipmunks, and I'll even chuckle at their antics when they aren't eating the irrigation lines or landscape lighting.

Repellents do a so-so job with chipmunks, so that leaves exclusion and traps. Hardware cloth enclosures can protect special plants and chicken wire cages are useful for bulbs. Snap rat traps baited with peanut butter, nutmeats, raisins or corn are a lethal option; set them in a box with open ends to protect pets and children. Box, bucket and multiple catch traps, which leave the chipmunks alive, are also effective. But be aware that it is not legal in New York State to release chipmunks in a park, forest or other area without the landowner's permission and proper permits.



**Text by David Chinery and photos on this page by Master Gardener Pat Thorne**



**Sharon Mann**



**Donna Reickert**



**Donna Reickert**



**Pat Thorne**



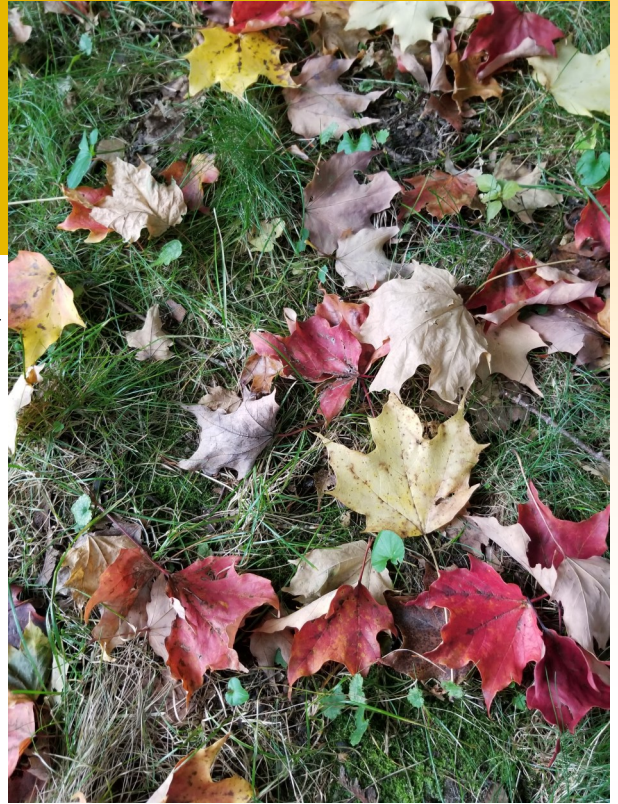
**Barbara Nuffer**

# *Loving, and leaving, leaves*

*“The falling leaves drift by the window  
The autumn leaves of red and gold  
I see your lips, the summer kisses  
The sun-burned hands I used to hold”*

Johnny Mercer’s lyrics are a little too personal in COVID time, and the hands may be sun-burned for a most unromantic reason – too much yard work. And if you follow the standard practices of raking and bagging, the autumn leaves only add to the toil.

Those same leaves which inspired the poets have gained the attention of a much more practical lot, scientists at state universities. Researchers at Purdue point out that chopping up leaves with a mulching mower and leaving them on the lawn is less time consuming than blowing, raking or vacuuming them away. Mulching leaves has no effect on soil pH or nutrient availability. It does not increase the amount of thatch or the chances the lawn might come down with a fungal disease. In fact, mulching leaves into a lawn often improves the soil structure, which, in practical terms, means the soil particles stick together better. This, ergo, means the soil will be less compacted, contain bigger pore spaces better able to hold both air and water, and increase the activity of beneficial soil-dwelling organisms. So, on a microscopic level, mulching is a win-win proposition for both you and the ground you stand upon.



Okay, you say, mulching works in a research trial, but what about the real world? Obviously, heavy doses of leaves, even if chopped, can smother and kill a lawn, so this new advice has you mowing more often. Mulching dry leaves is much easier on your machine than wet leaves, so you’ll have to watch the weather, too. And it might be tough to follow this practice on a small lawn surrounded by many trees, where there just isn’t enough space to macerate a tremendous volume of dead foliage into the turf. In that case, I still see a need for raking, but there is a silver lining: leaves make excellent fodder for a compost pile, the best solution of all.

What about the additional pollution made by running your mower more? The alternatives aren’t attractive. Piles of leaves raked to the curb leach phosphorous into storm sewers, certainly an environmental negative. If those leaves are eventually burned or dumped in landfills the story only gets worse. And even if they go to a large-scale composting facility, my hunch is that more fossil fuel is used in their collection and trucking, then processing into compost, than would be if you kept the leaves home and mulched them yourself.

Michigan State scientists have discovered another positive to letting leaves lie: weed reduction. Researchers there made applications of pesticide-free, pulverized leaves from red, sugar and silver maple and red oak trees to lawn grass and dandelion plots in the fall, then counted the number of dandelions in each plot the following spring. Amazingly, those familiar yellow-flowered weeds were reduced by up to 80% after just one application. Another reason to leave your rake on the rack.

*Text and photos by David Chinery*



## What to do in October?

*As the colors of October explode around us and this year's garden fades into history, there's still work to do. So grab a sweater, put on some gloves and go play in the dirt. Here are some fun filled suggestions to keep you outside and enjoying the crisp air.*



- \* Think Spring: thin out one-third of the oldest branches of forsythia, lilac, spirea, and potentilla for better bloom and shape next spring. It's also time to plant your spring bulbs.
- \* Can you dig it? Time to free tender tubers and corms of dahlias, cannas, caladium, and gladiolus and take them to their winter homes.
- \* Don't cut back ornamental grasses, sunflowers, and wildflowers—leave them for winter interest and for wildlife.

- \* Think holidays. Now's the time to pot up some paperwhite bulbs for holiday forcing.

- \* Clean up vegetable garden, till the soil, then plant your winter cover crop.

- \* Remove annuals and cut back perennials leaving some seed-heads for the winter birds and to trap snow for insulation.

- \* Prune old wood and crossed branches in shrubs and trees.

- \* Keep watering newly-planted trees and shrubs before cold weather comes.

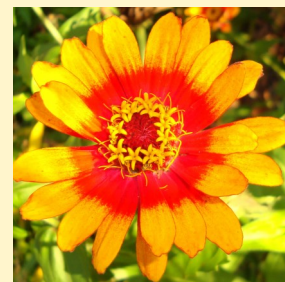
- \* Mulch perennials with compost or with peat moss, or a mix of both after the ground freezes.

- \* Wrap tender shrubs for winter protection.

- \* Rake leaves and use as mulch in flower beds or spread on vegetable gardens to compost.

- \* Clean and store planters and pots. And don't forget to clean and sharpen your tools.

- \* Reward your good work....with some cold cider and warm apple pie.



# The Colors of Summer

My favorite wildflower bouquet contains Queen Anne's lace (wild carrot or *Daucus*) and purple loosestrife (*Lythrum*). Both of these flowers are very abundant, so for August and part of September, there is never a problem with having a beautiful bouquet in your home. Perhaps you may have wondered how Queen Anne's lace got its name. If you look at the flower, you will see a black dot at the center. Legend has it that Queen Anne was making lace and she pricked her finger. The black dot at the center of the flower is the small amount of blood from her wound. It is native to parts of Europe and Asia and has naturalized here. Purple loosestrife is also an imported flower, coming from Eurasia. Most gardeners, ecologists and government agencies consider *Lythrum* to be a weed because this plant spreads so rapidly. I used to teach at Hudson Valley Community College, and when I first started there (early 1980s), the marshy areas of our nature trail had mostly cattails. When I retired in 2016, we had hardly any, or perhaps no cattails. Instead the cattails had been replaced by invasive exotic *Phragmites*, also known as common reed. As I retired, *Lythrum* was moving in to join the *Phragmites*. So things change over time.

The two plants (*Daucus* and *Lythrum*) are quite different. *Daucus* grows in meadows (fairly dry) and *Lythrum* grows in wet, marshy areas. The colors contrast beautifully with one another: a pure white and a wine red. *Daucus* is a biennial, whereas *Lythrum* is a perennial. In a previous article, I mentioned that some people classify flowering plants into four non-scientific groups (mints, with square stems, Umbeliferae, with umbrella-



shaped flowers, Compositae, in which each "petal" is actually a flower and the Amarylles, which have leaves that do not have a flat blade such as irises and chives). *Lythrum* has square stems, so it is actually a member of the mint family. Cuttings of both plants usually measure ten to twelve inches and each stem is amply supplied with flowers. If you compare this with chicory (*Cichorium*), it becomes quite apparent why I prefer a *Daucus*/*Lythrum* bouquet to a *Daucus*/*Cichorium* bouquet. Chicory is a beautiful blue color which would complement Queen Anne's lace very nicely, but the flowers of chicory are placed far from one another on the stem. What could be a substitute for loosestrife? One that comes into bloom at the right time is the very attractive and densely flowered goldenrod (Compositae), and while I think golden and white make an attractive combination, in my mind a bouquet made of these two flowers is not as attractive as the combination of white and wine red. So as autumn proceeds and winter advances, I'm looking forward to seeing these and other wildflowers next year!



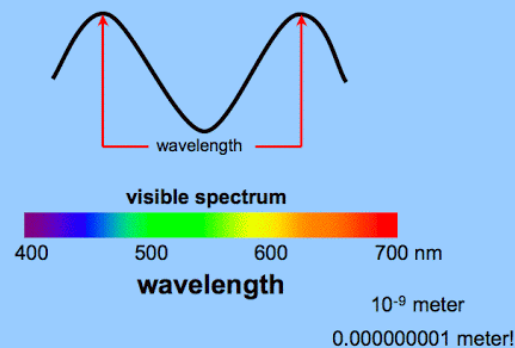
*Text by Master Gardener Inge Eley and photos by David Chinery*

## LET THERE BE LIGHT!

Light is a form of electromagnetic radiation, and being radiation, you know it is a source of energy. What can happen to light? It can be reflected, absorbed or transmitted. If it is absorbed, it means light and its energy is taken in by an object. This is what happens in photosynthesis. White light, such as sunlight, consists of the color spectrum. ROYGBIV (red, orange, yellow, green, blue, indigo, violet) is an easy way to remember the

color spectrum. The visible light with the least energy is red. Any electromagnetic radiation with less energy than red light cannot be seen. If the radiation has slightly less energy than red light, we call it infrared and infrared can be detected as heat. If visible light has more energy than can be seen by humans, we call it ultraviolet. What can these radiations do? Well, infrared cameras are used to photograph animals to determine if and where there are warmer than normal areas in a body. Infrared radiation is not harmful to animals. On the other hand ultraviolet is. Ultraviolet light has been known to damage tissues. For example, if you get a sunburn, you find your dead skin peels off after a short while. There are also more dramatic results: skin cancer has been linked to excessive exposure to ultraviolet light. Notice that green is in the middle of the spectrum, so green absorbs both ends of the spectrum while reflecting the middle of the spectrum. If you were to grow plants under green light, it would be like growing them in the dark because they cannot absorb this light. This means red and violet lights are absorbed most by chlorophyll, and thus red and violet lights are most useful in photosynthesis. Have you ever noticed that most lights used to grow houseplants are slightly lilac? When I used to teach we would measure the rate of photosynthesis by using an aquatic plant, *Elodea*. *Elodea* gives off bubbles of oxygen gas. We counted the number of bubbles under different conditions and we found that red and violet lights were optimal for photosynthesis. Almost all biology textbooks include a graph of photosynthesis showing the two peaks at both ends of the spectrum and a low line for the middle of the spectrum.

Light: An Energy Waveform With Particle Properties Too



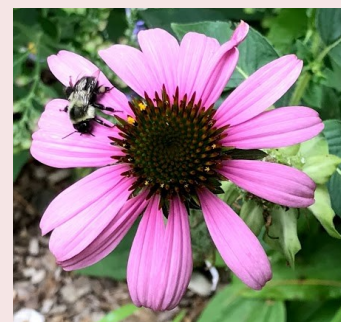
**TEXT BY RENSSELAER COUNTY MASTER GARDENER INGE ELEY**



**Correction!**

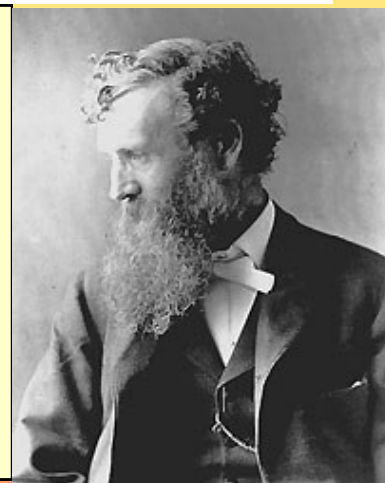


In last month's "Root Concerns," we regretfully forgot to include the name of the author, Rensselaer County Master Gardener Betsy Kauffman, on the article entitled "Picture these Natives! Please accept our apologies.



# *“Between every two pines is a doorway.”*

John Muir (1838-1914, naturalist, author, environmental philosopher, botanist)



**Gardening Questions?**

**Call The Master Gardeners!**



*During the COVID 19 Pandemic, our offices are closed to the public, but you are welcome to contact us as directed below.*

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