



## A Newsletter for GARDENERS OF ALL LEVELS

By Helena Area Master Gardeners

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### Inside this issue:

Worm Composting	1
Love Those Trees!	3
Free to Good Home	4
The Weeds of Summer	5
Cabbage Worms	9
Volunteer Projects	11
Voles, Pocket Gophers and Ground Squirrels	12
Gardening Calendar	14
Recipes of the Month	15
Ask the Experts	16
Plant Profile— <i>Campanula</i>	17
Events and Contacts	18

### Worm Composting (Vermicomposting) for the Home Gardener

**Carol Ballew**

I started worm composting because conventional composting wasn't working fast enough for me in Helena and it was taking up too much space in my very small yard. With our cold winters and short summers, a compost pile has to be at least three feet square and three feet high to generate enough heat to work effectively, and most people find a three-pile system is necessary. Worm composting is faster, has a smaller footprint, and worm compost contains more nutrients than conventional compost. A worm bin fits almost anywhere, even indoors so worm composting allows apartment dwellers to compost their kitchen fruit and vegetable scraps. The bin doesn't smell bad and the worms don't escape. I harvest about 6 gallons of compost from a medium-sized plastic tub every summer; the process is slower in the winter.

You will probably have to buy the first batch of worms, but other than that, you can start worm composting for free by recycling things you have around the house.

You will need a **plastic bin** with a snug lid, about 12 inches x 20 inches x 14 inches tall or similar size. This is big enough for a family's fruit and vegetable scraps and a manageable size to tend and move. Drill a dozen 1/8 inch drainage holes in the bottom and a few larger



air holes on the sides. Put a piece of plastic screen in the bottom to keep the drainage holes from getting clogged. Set the bin on a tray or old cookie sheet to catch any water that may leak out and prop it up on a few bottle caps. Liquid that ends up in the tray is compost tea, which you can dilute and use to water houseplants. There shouldn't be much water draining out. The contents should always be moist but never soggy.

Worms need some kind of loose organic **bedding** that stays slightly damp but drains well. You can recycle many things for bedding: **Shredded newspaper** (no glossy advertising inserts or magazines) torn into narrow strips or run through a home document shredder; **Shredded cereal boxes and cardboard** torn into strips or run through the shredder; **Old coir liners** from window boxes and hanging flower baskets. You can also use **straw, dry leaves, composted wood chips, and other garden waste materials** but be sure they have not been sprayed with herbicides or pesticides and do not have plant diseases, weed seeds, or pests. A worm compost system does not heat up to the 140 to 160 degrees F necessary to kill disease organisms, weed seeds, and pests.

You need **special compost worms**. *Eisenia fetida* (red wigglers) are champion composters, tolerate minor fluctuations in temperature, moisture, and pH, and reproduce rapidly. Another good compost worm is *Lumbricus rubellus*. You can order worms on line, check out your local Farmers' Market, or ask other gar-



## Worm Composting (Vermicomposting) for the Home Gardener—continued

deners. A pound is plenty to start with. They will eat about 2 cups of fruit and vegetable scraps a day.

**Living Conditions.** The ideal temperature is between **60 and 75 degrees F**. Compost worms die at temperatures below 50 degrees and above 85 degrees. Be prepared to move the bin indoors in the winter and to a cool, shady spot in the summer. The contents of the bin should always be **moist** ("like a damp sponge") but never soggy. Worms prefer a **neutral pH** of 7.0 but can tolerate minor variation. If you add lots of coffee grounds or tea leaves, both acidic, it is a good idea to add crushed egg shells regularly or toss in a handful of garden lime (calcium carbonate) occasionally.

**Worm Food.** You can feed worms all kinds of fruit and vegetable scraps from the kitchen, except citrus. Cooked vegetables are fine as long as they don't have sauce, butter, or dressing. Worms can also eat cut flowers and garden clippings, although those may fill the bin quickly. You can chop kitchen scraps up, or even whiz them up in a blender, to reduce the volume in the bin and make the composting process go faster. Worms will eat coffee filters and tea bags, too. **Don't** feed worms dairy, meat, fats or oils.



**Getting Started.** Fill the bin half full with moist bedding. Sprinkle a big handful of garden soil over the bedding -- worms need the grit for their digestion and the microorganisms in the soil contribute to the composting process. Add fruit and vegetable scraps on top of the bedding, about an inch deep, leaving the bedding uncovered in

the corners. Add the worms. Cover everything with another thin layer of damp bedding to help retain moisture, then snap the lid on.

**Feeding and Maintenance.** Pull the top layer of bedding aside and push new food down on one edge of the existing food, using a new spot each time. If food is not disappearing, and especially if it is spoiling, the worms are not keeping up.

There is nothing wrong with moldy food from the worms' point of view, but the smell can be unpleasant if your bin is indoors. Summer produce can overwhelm the capacity of a small bin. You can put the excess in a regular compost pile or freeze it to feed the worms in the winter (thaw it first).

**Harvest compost** when the amount of bedding has decreased by half and you see brown, earthy-looking compost in the bottom of the bin and in the bedding. Spread an old shower curtain or tarp on the ground in bright light. (Don't do this on a hot day -- worms die if they get too hot). Dump the contents of the bin and wait a few minutes. Scrape off an inch or two from the top of the pile, wait a few minutes, and scrape again. As you scrape, the worms will retreat down to get away from the light. Put the scrapings on a screen over a bucket. After several passes, you will have a bucket of compost, old bedding and unfinished food on top of the screen, and a pile of worms. Don't leave the worms for more than a few minutes. Rinse the bin (and catch this compost tea concentrate), add fresh bedding, old bedding and unfinished food, and some new food. If you have more than a cup or two of worms, you can start a second bin or give some away. Return the rest to the bin.



### Resources and References

<http://homepage.mac.com/cityfarmer/PhotoAlbum23.html>

The city of Vancouver's webpage for urban farmers and apartment dwellers has detailed instructions for worm composting and a step-by-step photo album of the process.

<http://www.wormwoman.com>

Mary Appelhof's website. Ms. Appelhof is the author of *Worms Eat My Garbage* and other books about worm composting. The book is an excellent guide for the beginning worm composter.

1. Home Composting, by Michael P. Vogel, Montana State University Extension Service publication MT199203 HR revised 8/03.

2. See the city of Vancouver's urban farmer website about urban and apartment worm composting: <http://homepage.mac.com/cityfarmer/PhotoAlbum23.html>

- ♣ **Don't wear perfume in the garden - unless you want to be pollinated by bees. ~Anne Raver**
- ♣ **Despite the gardener's best intentions, Nature will improvise. ~Michael P. Garafalo**
- ♣ **When weeding, the best way to make sure you are removing a weed and not a valuable plant is to pull on it. If it comes out of the ground easily, it is a valuable plant. ~Author Unknown**

## Love those trees!

### Marga Lincoln

It's the season we in Montana love our shade trees. On any hot day, they're a people magnet – as folks seek relief from heat.

Unfortunately, our love of our leafy friends doesn't necessarily mean we lavish them with the attention they need to thrive. In fact, a great number of the boulevard trees in Helena are not getting anywhere near the water they need to survive.



“Watering is a big thing,” said Lewis & Clark County Extension Agent Brent Sarchet. Trees need deep watering at least three times per month during spring and summer, he advised. By mid- to end of August really cut back on watering until a hard freeze. Once the leaves start falling, give the tree another good soaking. “During mild winters, water a couple times a month, especially your evergreens,” he said.

How much is enough?

Well, you are trying to have the water reach below the first 4 to 5 inches of soil, he said, where a lot of the water is being soaked up by grass roots.

“The water amount depends on the tree and its size, but it's hard to over water a big tree - particularly a big blue spruce.”

Also, it's important to make sure you are watering at the tree's drip line, which is located at the tree canopy's edge. That is where all the feeder roots are located. The root system spreads below ground as far as or even further than the canopy above ground.



Sprinklers, irrigation systems or a simple garden hose will do the job. You can leave the water on for hours or even overnight to thoroughly soak the roots.

With the exception of fruit trees, do not fertilize trees unless there is an identified nutrient deficiency, especially in our climate and growing zone. If you didn't fertilize your fruit trees earlier this year, don't start now. The cut-off date is about the end of June.

Too much growth late in summer will make your trees susceptible to frost damage. Excessive nitrogen promotes late vegetative growth, and the growth is usually weak. Consult with the Extension office, or a certified arborist on how to correctly fertilize fruit trees and trees with a nutrient deficiency.



Topped Tree

Pruning is also important for maintaining a healthy tree. But done wrong, it will kill it. For extensive pruning, hire a certified arborist, advised Sarchet.

See Montana Extension publications “Pruning Fruit Trees in Montana” (MT199215 AG) and “Pruning Deciduous Trees” (MT199304AG) for advice and helpful illustrations on the correct way to trim back branches and remove dead wood.

Never top a tree, said Sarchet. A topped tree looks like it has been given a buzz haircut – with all the branches cut off flat across the crown. There are a number of egregious examples of topped trees, particularly under power lines in Helena. Topping not only ruins the shape of a mature tree, it's “a long, drawn out death sentence,” said Sarchet. “It promotes decay and death.”

No certified arborist would top a tree or they would lose their certification. The International Society of Arboriculture (<http://www.isa-arbor.com/>) lists certified arborists





## Love those trees! - continued

by geographic area. Sarchet, who is certified, can give advice about your trees, but can't be hired to do any work on them.

Typically, the best time to prune trees is winter and early spring, up until buds break. However, dead or diseased branches can be removed at any time, he advised – including any branches with cankers or fire blight.

Spring is the time to start watering thoroughly as soon as buds break. You can also start scouting for insects or any disease damage.

If you're considering planting a tree, “start with natives,” advised Sarchet. Or, you can select trees that grow in similar growing conditions as Helena – with the same moisture needs and hardiness.

You will want to do a little research to find out about trees that are disease resistant and grow well in the Helena area. “There are a lot of cool trees to choose from,” said Sarchet. Investing in a tree, will not only add cooling comfort on a hot summer day, but also shelter from winter winds. And a mature, healthy tree and landscaping can add as much as \$20,000 to your property value, according to several different studies, including one cited by the ISA.

“What better investment can you do for your property?” asked Sarchet. “I love trees,” he said. “I could go on and on about them.”

It's one area of your lawn where investment of your time and money is bound to pay off.

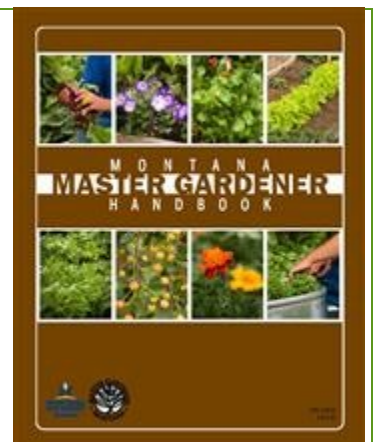


**Free to good home:** Dwarf indoor hibiscus "tree". Need to bring 17" to 18" pot. Call Marla and leave a message

**Free to good home:** Young black currant bushes. You dig. When grown, these are extremely prolific producers! Last year, I got 2 1/2 gallons of large, plump, currants off one 5 year old bush. Very sweet! Makes great jam! Need a sunny location with well-drained acid soil, protected from deer and/or elk. Call Karen Semple, 443-3376, to get directions and set up an appointment.

### Revised Montana Master Gardener Handbook Available

A revised edition of the Montana Master Gardener Handbook is now available from the MSU Extension service. Contact your local Cooperative Extension Agent or go to [http://www.msuextension.org/store/Products/Montana-Master-Gardener-Handbook\\_\\_EB0185.aspx](http://www.msuextension.org/store/Products/Montana-Master-Gardener-Handbook__EB0185.aspx) to order your copy.



# The Weeds of Summer - Weeding Tips I've Learned from Weeds

## Connie Geiger

We grow flowers and vegetables in a very large garden each year, as well as maintaining several flower beds. Weeds are abundant, and varied, in our rich clay soil and over the years I've learned to accept the fact that I'll never get rid of all, or even most, of the weeds that find a home there. At best we can knock them back enough to give the desirable plants a chance to thrive. Following are a few tips I've learned during this struggle.



**Annual vs. Perennial:** this is a major factor to consider in controlling weeds. If you're not certain whether the weed you have is annual or perennial and you don't have the time to look it up, a good rule of thumb is the size of the root system and the overall stature of the plant. Annuals tend to be less robust, and have shallower root systems than perennials. An immature annual plant can be pulled out of the ground (root and all) more easily than can a perennial.

Annual weeds propagate by seeds, so a good approach to controlling them is to pull them before they go to seed, and in fact pulling them before the flower matures is best since some weeds can create seeds from a pollinated flower even after it's been pulled. If you can't catch them early enough then at least remove the seed heads before they drop their seeds. Keep in mind that many weed seeds can remain viable in the soil for many years. So despite your good weeding methods this year, you might still have that same type of weed in the same place again next year, and the following year, because of the old seeds that never previously germinated.



Get 'em while they're small: use a sharp hoe when annual weeds are

only an inch tall (or less). If you can't get them when they're young, and you're not too worried about the aesthetics of weeds in your garden, then wait to pull them when they're more mature. You'll have more of the plant to grip and you'll have better luck pulling out the whole root system, otherwise they can break off at the soil level and then grow back shorter and closer to the ground, making it harder to pull them later.

Till or work the soil only when you're ready to plant: it allows as many of the annual seeds to germinate as possible, so when you do till you'll eliminate more of them.

**Perennial weeds** are much more difficult to eradicate, particularly if you don't like using chemicals in or near your garden.



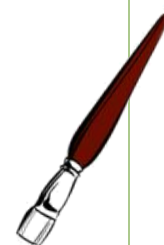
Most perennial weeds propagate from their roots as well as from seeds. You can pull or dig them, but you have to ensure you get the entire root, which for some weeds (creeping bell flower, leafy spurge, Dalmatian toad flax, knapweed) is almost impossible. We've learned to live with some of the perennial weeds by just making it as uncomfortable for them as possible, using a combination of cutting, digging, mulching, and sometimes even burning them. Spraying with herbicide may be the only approach if you want complete eradication.

**Herbicides:** Spring is the most effective time to spray, when the plants are small but actively growing. It is essential to research proper use of herbicides prior to spraying. Check with your Extension Agent. If you don't get the spraying done early, and the plants are already in flower, spraying may not be as effective, and may not prevent the spread of seeds. It's best at that point to cut the flowering parts and destroy them. Continuous cutting of perennial weeds has also helped to lessen their spread,



because they grow back smaller and less robust.

We don't like using herbicides unless absolutely necessary, so when desperate we have used a milder herbicide in our flower beds, but only on specific, individual weeds, using a delicate selective approach – caressing the front and back of the leaves with a cotton glove outside a rubber glove, or small paint brush, moist with herbicide.



It might be comforting to remember that one gardener's weed is another gardener's treasured plant, and that Mother Nature always tries to fill a void. So we try to focus our effort mostly on the "weeds" that are having the most impact on our desirable plants

**Mulch:** Add mulch after clearing as many weeds as possible. It can prevent germination of more annual weed seeds, and can slow down the growth of perennial weeds. It has the added benefit of retaining and regulating moisture around your desirable plants.

**Weed barriers:** Most plants can't survive for long without light and moisture. Fabrics work well in discouraging annual weed germination, but we've had limited success with it against perennial weeds and grasses. Heavy-duty black plastic over areas of quack grass, whose roots are not more than 6-8" deep, has worked for us in some cases, when it's an area we can leave that way for a season or two. Some gardeners have had luck with "cooking" tough perennial weeds (i.e. under clear plastic or glass covering, during the heat of the summer). Some of the tougher noxious weeds have amazingly deep root systems so I suspect that barriers won't work well against them, at least not for the long term.



# The Weeds of Summer - continued

**Pull weeds** when the soil is moist, and by grasping the entire plant down to the soil surface. You'll have a better chance of removing the entire root system.

For more information see weed guides such as Weeds of the West published by the Western Society of Weed Science; or Weeds of the Northern US by Royer and

Dickinson; and of course you can always ask your County Extension Agent.

## Images of the Weeds of Summer

Photos by Connie Geiger unless otherwise noted



**Creeping bellflower**, *Campanula rapunculoides* – aka Hell's Bells  
Perennial

Ubiquitous in the Helena area – the actual root system is difficult to locate without deep digging to find the white carrot-like tap roots. Sometimes those roots are deeper than 16”.



**Common chickweed**, *Stellaria media*  
Annual

These delicate-seeming plants easily break off at the soil surface, only to grow back in a few days. Best eliminated by hoeing or cutting them about 1/2 to 3/4 “ below the soil surface.

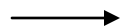


**Common Mallow**, *Malva neglecta*  
annual or rarely biennial, reproducing by seeds.

Common mallow has been used as an edible and medicinal plant.

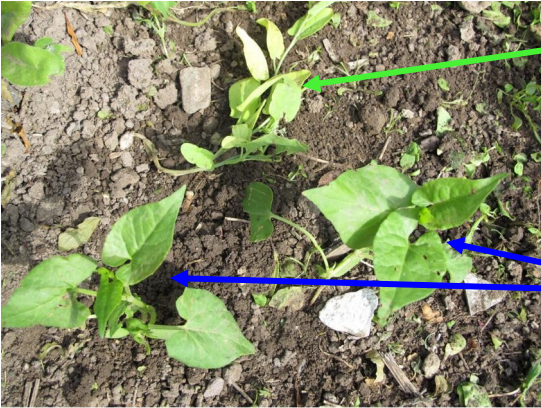


Photos from University of Missouri Extension





## The Weeds of Summer - continued



**Field bind weed (top), *Convolvulus arvensis***

Perennial

Bindweed is difficult to eradicate without the use of herbicides. When entangled around a desirable plant, find where the vine meets the soil, pull it and leave the vine to die around the good plant. Attempting to disentangle the vine often injures the desirable plant.

**Wild buckwheat, *Polygonum convolvulus* (left and right)**

Annual

Buckwheat can often be mistaken for field bindweed. Buckwheat can be easily pulled or cut to control it.



**Black medic, *Medicago lupulina***

Annual or short-lived perennial, depending on climate

Black medic is a legume which fixes nitrogen in the soil and can also reduce soil compaction due to its deep root system. It grows well in poor soils and unmaintained lawns. It reproduces by seed.



**Redroot Pigweed, *Amaranthus retroflexus***

Annual

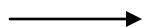
Pigweed reproduces by seed. Young leaves have been used as salad greens. Tilling seems to decrease the viability of seeds.



**Purslane, *Portulaca oleracea***

Annual

This is a succulent, so if parts of the plant are left lying out in a moist area they may survive and root again.





# The Weeds of Summer - continued



**Lambsquarter, *Chenopodium berlandieri***  
Annual

Lambsquarter reproduces by seed. It is a native plant to North America. It was once used as a cereal crop, and is related to the cereal grain *C. quinoa*, quinoa. Although still grown as a cereal crop in some countries, Lambsquarter is generally considered a weed in North America.

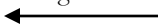


**Quackgrass, *Elytrigia repens***  
Perennial

Quackgrass is a coarse-bladed grass which reproduces by both seeds and roots. The stalks on which the seed heads are produced are hollow. The roots can form a dense mat underground, and any piece of root left after tilling, pulling or digging will grow into a new plant.

Herbicide may be the most effective means of control for quackgrass.

Photo courtesy Maine Department of Agriculture



Root system of quackgrass

Root tips are needle sharp. In this photo it has pierced and grown through a potato, and so can pierce through landscape fabric.

Photos by Judy Halm





## Cabbage Worms - What you Need to Know

### Charlotte Bowenhollow

I have never been particularly interested in larvae – give me a butterfly or a bug any day. That changed when I started finding holes in my kale and chard - so many that I needed to use a biological control last year to save my greens.

I decided that this year I would be prepared. Someone mentioned the pest might be cabbage loopers, *Trichoplusia ni*; but I found out that my nemesis was the **imported cabbageworm**, *Pieris rapae*. The small, active white butterfly which appeared in early to mid spring was the give-away, because the imported cabbage worm can overwinter in this area. The cabbage looper moths migrate here from warmer climates and may be more of a problem in the late summer. Diamondback moths are both resident and migratory, but less active after spring and less common here.

**Please see photos on page 10.**

There are 3 cabbage worms/larvae (caterpillars, actually) that account for most of the damage to Cole (mustard family) crops. All go through the same life cycle of egg - larvae - pupa - adult.



### ADULTS

The white butterfly of the **imported cabbageworm** (IC) is diurnal and the largest at 2", with 2 *dark spots* on the fore wings. The **cabbage looper** (CL) moth is nocturnal, but might be seen resting on the undersides of leaves during the day. Wings are a mottled brown-gray with a *silvery figure 8 or V* on the 1.5" wing span. The smaller (0.75") **diamondback** (DB) is also nocturnal and when its slender, gray-green wings are folded, it looks like 3 *vertical white diamond shapes*.

### LARVAE

IC larvae are 1" long, velvety green



with faint yellow stripes and sluggish behavior when prodded.

Looper larvae grow from 0.25 to 1.5"; they have a white stripe along each light green side and no legs in the middle section – thus they “loop” or “inch” along.

The larvae of the DB moth are light green, tapered at both ends, almost 0.5" and move vigorously when touched.

For the most part these caterpillars (larvae) feed on plants in the Cruciferae/ Mustard Family (also called Brassicaceae). They love especially cabbages, cauliflower, broccoli, Brussels sprouts, kale, collards, radishes and kohlrabi. Sometimes the loopers eat lettuce, celery and spinach, among other crops.

### EGGS

Imported cabbageworm eggs are oblong and yellow, laid singly on the upper and/or lower sides of the leaves. Looper eggs are white, pin head size and shape, laid singly on the outer fringes of lower leaves. The DB lay tiny white eggs near the veins of the leaf surfaces.

### PLANT DAMAGE

Young caterpillars of the IC and CL groups eat small holes, not always through the leaf. Older larvae create large, ragged holes, leaving the veins intact. They crawl toward the center of the plant as they mature, leaving large amounts of frass (fecal matter) and sometimes burrowing into plant heads and stems – often rendering the plant undesirable for eating. The DB larvae start towards the inside of the plant and move to the leaf outer edges, often eating all but the top layer of cells.

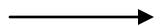
### WHAT CAN BE DONE?

**Encourage Natural Enemies:** We can be helpful to lady and ground beetles, predatory wasps (the Vespids: paper wasps and yellow jackets), parasitic wasps (the smaller, non-stinging ones), certain true bugs (soldier, spined shield and ambush), lacewings and parasitic flies (the Tachinids). Plant native vegetation and plants with small flowers, such as parsley, dill, fennel, coriander, alyssum, marigolds, calendula and daisies.

**Use Cultural and Physical Practices:** Inspect transplants for eggs and larvae. Consider planting red varieties, e.g. cabbage. Plan for crop rotation to rejuvenate the soil and reduce chance of disease and infestation. Use row covers early, when feasible. Remove older, finished plants and clean up garden debris to avoid remaining larvae and pupae. Inspect plants at least once a week and remove any pests. Plant before the last frost, as this may reduce chances of damage. Practice Cruciferous weed control – remove weeds in the Mustard family – from your garden area, and use pheromone traps to monitor nocturnal activity.

**Biological Controls**, if necessary: Use Bt, *Bacillus thuringiensis*, a naturally occurring bacterium toxic to the larvae but not other organisms, and vegetables can be consumed the same day. One source suggests using Neem, a product from seeds of the mahogany family that disrupts reproduction.

**Good luck saving your greens for your own table!!**



## Cabbage Worms - What you Need to Know - continued



Imported Cabbage worm moth, David Cappaert, Bugwood.org



Imported cabbage worm larvae, Connie Geiger photo



Cabbage looper adult, Keith Naylor, Bugwood.org



Cabbage looper larvae R.J. Reynolds Tobacco Company

### Article Resources:

- [www.extension.osu.edu/topics](http://www.extension.osu.edu/topics)
- [www.vegedge.umn.edu](http://www.vegedge.umn.edu)
- [www.entnemdept.ufl.edu](http://www.entnemdept.ufl.edu)



Diamondback Adult, Russ Ottens, Bugwood.org



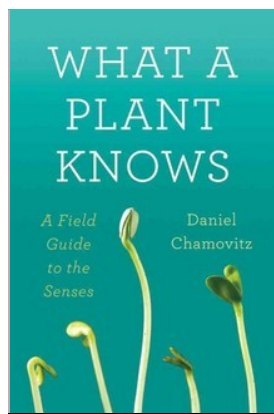
Diamondback Larvae, Russ Ottens, Bugwood.org

## Book Review: What a Plant Knows: a Field Guide to the Senses

### Connie Geiger

“**What a Plant Knows: a Field Guide to the Senses**” by Daniel Chamovitz, PhD; Scientific American/Farrar, Straus and Giroux; 2012

This little book is a fascinating science-based examination of the parallels between plant and human senses. Chamovitz briefly debunks the “new-agey” myths of the 80s that gave plants almost human-like emotions. However, he explores the biological processes in plants that are surprisingly similar to (and sometimes more advanced than) our own. He reminds us that our definitions of our senses



are human constructs that are not purely biological but complicated by our emotions, memories, and other neurological processes. We may think that the sense of smell requires having a nose and the ability to discern “noxious” from “wonderful”. However, since noxious and wonderful are subjective, that discernment is not a function of the part of the brain that actually deals with detecting odors. When the various senses are broken down to their basic level – i.e. perceiving an odor and responding – we’re not that different from plants.

Chamovitz explores how plants see, smell, respond to touch, react to sounds, retain information to be used later (memory), and how they “know” their surroundings (a sense of place). He provides biological details, and references many scientific studies, but he describes them in easy to understand layman terms. I have been so fascinated by the mysterious “powers” of plants, and this book gave me a glimpse into some of those mysteries.



## Volunteer Projects by Master Gardeners

Cathy Morris



I have been with the Master Gardener Program since the first level classes were offered a couple of years ago. Now that several years have passed I am amazed at how many volunteer opportunities there are in the Helena area. So what are the volunteering opportunities in which Master Gardeners are participating?

For the last two years the Master Gardeners, in conjunction with the county Extension Office, have staffed an informational gardening booth at the Saturday Farmer's Market. The booth gives the community an opportunity to ask questions of the Master Gardeners and to find plenty of gardening information in the many brochures they are welcome to take with them. The community can also bring samples of plant diseases or bugs to be sent to the Schutter Diagnostic Laboratory in Bozeman for analysis.



Another project several Master Gardeners are working on is researching historically accurate plantings for the Original Governor's Mansion, so the plants match those available during the early 1900s time period. Some of the research was done this spring, and the Helena Garden Club planted their spring annuals this year based on this research. More research will be done in the fall to plan for additional plantings next year.

Several Master Gardeners have also been providing gardening assistance to Splashes of Joy, a local nonprofit organization that helps people facing serious illness or disabilities and who cannot do gardening or landscaping themselves. The projects have ranged from large to small. The first project undertaken was adding several gardening areas to a large yard. The project involved planning, designing the landscape area and planting flowers and shrubs. Recently the Master Gardeners have helped weeding, planting and mulching other gardens, and currently are planning a rework of a therapy garden bed.

The Helena Garden Club has done several plantings for the Cooney Home, the Original Governor's Mansion and Reeder's Alley, and has requested Master Gardener help with these projects. The club is currently working at the Wild Center near Spring Meadow Lake planning a garden and has requested additional Master Gardener help for this project.

Other projects include volunteer opportunities at Tizer Gardens working in the All American Select Garden; assisting in the community gardens; and working with school age children planting vegetable gardens or taking them exploring the wildflowers of Mount Helena.

There are many great opportunities for community outreach. As more people hear about the Master Gardeners program I can only imagine how many more opportunities there will be. What a great opportunity to give back to the community, so get out and garden and have a wonderful time.



### Gardening Tips

The next time you boil or steam vegetables, don't pour the water down the drain, use it to water potted patio plants, and you'll be amazed at how the plants respond to the "vegetable soup."

The quickest way in the world to dry herbs: just lay a sheet of newspaper on the seat of your car, arrange the herbs in a single layer, then roll up the windows and close the doors. Your herbs will be quickly dried to perfection. What's more, your car will smell great.

<http://www.hgtv.com/gardening/14-simple-gardening-tips-and-tricks/index.html>

# Voles, Pocket Gophers and Ground Squirrels...Oh My!

**Brent Sarchet, Lewis & Clark County Extension Agent**

Voles and pocket gophers are a common garden nuisance, and if you have a large city lot or property or neighbor a large open lot, ground squirrels may also be present. So what do you do with all of these unwanted guests? The first step is to get a proper identification. The term ‘gopher’ can sometimes be heard to describe all three species, but in fact they are all very different from each other.

There are approximately 23 different species of **voles** that are found in every state of the mainland U.S. and Canada. Voles resemble large field mice. They have holes with about 1” to 2” openings. Their tunnels can be found in lawns and pastures where there was snow cover most of the winter. The vole’s diet consists mostly of seeds and the roots and foliage of plants. Voles can also girdle trees by eating the cambium layer of small trees and shrubs. Voles can easily be trapped with some mouse traps and a piece of gutter placed over their hole.



Vole or meadow mouse (L), and vole holes (R); photos courtesy University of Maryland Extension



Vole trap using mouse traps and rain gutter

**Pocket gophers** get their name from the fur-lined pockets in their cheeks, which are used to carry food. Pocket gophers look like short-tailed rats with well-developed front claws used for digging and pushing soil. They spend 99% of their time underground, leaving characteristic fan-shaped mounds of dirt on the surface. Most of the time you will not see the holes to their tunnel system, which are plugged with dirt to exclude intruders. Their diet consists mostly of roots and tubers.

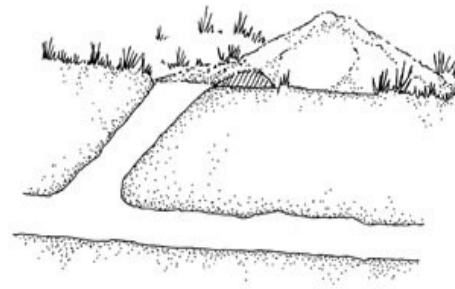
There are several different kinds of traps that can be used to control pocket gophers. The trick is in locating the tunnels, placing the traps in the tunnels and then blocking out all sunlight. There are several different baits that can be used, but they are difficult to place in the correct position due to the nature of the pocket gopher’s tunnels. For large fields, a gopher machine, sometimes called a “burrow builder” can be used. As the burrow builder is pulled behind a tractor, it makes an artificial burrow that intersects the natural tunnel system. The burrow builder drops piles of bait in the artificial burrow. The gophers encounter the burrows while digging, follow them, and then feed on the piles of bait.



Pocket Gopher; Washington Department of Fish and Wildlife



Fresh gopher mound. The depression in the mound indicates a plugged hole. Photo by Danielle Gunn



The side view of a portion of a pocket gopher’s burrow system showing the mound, the short, sloping lateral tunnel, and the deeper main tunnel. (Drawing by Jenifer Rees.)



## Voles, Pocket Gophers and Ground Squirrels...Oh My! - continued

There are two different species of **ground squirrels** that are found in our area wrecking havoc on people's property: the Columbian Ground Squirrel and the Richardson Ground Squirrel. If you are so lucky, you may also have Townsend and Washington varieties, which are less common. Ground squirrels eat grasses, forbs and seeds. They live in extensive underground burrows that may have many entrances. The entrance holes are about 3" to 6" in diameter. Ground squirrels can be found above ground feeding on plants throughout the day. They look similar to a squirrel you would find in your trees except they have shorter tails. Body-gripping traps and guillotine traps work very well at capturing ground squirrels. Baits can also be used, but the most effective bait is a restricted use anticoagulant bait such as Rozol. You must have a private applicator or commercial applicator license to use this product. The anticoagulant bait can be placed in a PVC bait station or each hole can be baited with a small amount. Remember to read the entire label of any pesticide product before using it. While the smoke bombs that you can get at many hardware stores may be fun to use, they are not very effective, so save your money. Regardless of what the internet says, gum is not effective at killing them.



Richardson's Ground Squirrel—flickertail



Columbian Ground Squirrel  
Phil Myers (photographer), Museum of Zoology, University of Michigan



PVC ground squirrel bait trap

Voles, pocket gophers and ground squirrels are common pests of many property owners. The key in management is identifying which species you have and using the most appropriate control technique for the species. Control of these species is achieved with early detection and relentless pursuit. Stay tuned for a YouTube recording that will be coming out on management of these species next spring. Good luck!

### Garden Word Search!

See if you can locate these common garden words in the puzzle to the right.

- Basil
- Tomato
- Arugula
- Pepper
- Compost
- Soil
- Weed
- Bug
- Worm
- Dew
- Deer
- Bee
- Moth
- Vole
- Crop
- Noon

B	U	G	S	F	P	D	G	B	A
A	T	U	B	E	E	V	M	Y	R
S	R	Z	R	W	V	O	L	E	U
I	E	L	E	O	H	T	O	M	G
L	E	E	P	R	L	A	K	H	U
A	D	O	P	M	I	M	I	R	L
G	R	F	E	N	O	O	N	C	A
C	O	M	P	O	S	T	P	K	D

## Gardening Calendar - Connie Geiger

Conditions during each spring in your location will determine the actual timing of your garden work. If you have questions regarding the timing of garden activities in your area, please feel free to ask a Master Gardener at [HelenaMasterGardeners@hotmail.com](mailto:HelenaMasterGardeners@hotmail.com).

### July

- ♣ Plant another succession of greens, radishes, and peas, in shady areas of the garden.
- ♣ As vegetable plants, annuals, and perennials mature, mulch with straw, newspaper, cardboard, or wood chips to conserve water, provide more even moisture and less weeding.
- ♣ Start training vining plants, like peas or clematis, around poles, through wire mesh, or along string.
- ♣ Start routinely checking for garden and orchard pests (aphids, mites, and powdery mildew).
- ♣ Fertilize container flowers every two weeks.
- ♣ Deadhead annual and perennial flowers to encourage new flower growth.
- ♣ Remove water sprouts (from the trunk) and suckers (sprouts from the roots) from trees.
- ♣ Prop up branches of fruit trees that are heavily loaded with fruit.
- ♣ Plant fall Cole crops (broccoli, cabbage, Brussels sprouts and kohlrabi).
- ♣ Harvest summer squash while small and tender for best quality; and new potatoes when flowers appear.
- ♣ Make sure potato tubers, carrot shoulders, and onion bulbs are covered with soil or mulch to prevent development of green color and off flavors.
- ♣ Mow or cut (just above the crown) June-bearing strawberry plants immediately after harvest, thin to leave the young, more vigorous plants; fertilize with one-half of a pound of nitrogen per 100 feet of row.
- ♣ Harvest raspberries; after harvesting, prune fruiting canes to make room for new growth.
- ♣ Weed and fertilize rhubarb and asparagus beds; water deeply to develop crowns for next year.
- ♣ Dig spring bulbs when tops have died down; divide and store, or replant.



### August

- ♣ Start pinching back new tomato, pepper, and squash flowers to encourage existing flowers to develop fruit.
- ♣ Fertilize annuals, unless you've used a slow-release fertilizer mix early on.
- ♣ Prune Spring flowering shrubs (lilac).
- ♣ Harvest sweet corn when silks begin to dry and kernels exude a milky juice when punctured.
- ♣ Hand prune and destroy tent caterpillars.
- ♣ Harvest garlic and onions after the tops yellow and fall, then cure them in a warm, dry, well-ventilated area. The necks should be free of moisture when fully cured (about a week).
- ♣ Pick beans, tomatoes, peppers, and squash often to encourage further production.
- ♣ Divide and transplant perennials (iris, peonies, phlox and day lilies) at end of month when days



### September

- ♣ Harvest potatoes after the tops yellow and die; potatoes need to be cured before storage.
- ♣ Harvest winter squash and pumpkins when the "ground spot" changes from white to a cream or gold color; harvest rest before first frost.
- ♣ Stop fertilizing fruit trees, shrubs, and perennials. It stimulates late growth that will not have time to harden-off properly before winter.
- ♣ Slow down watering schedules and decrease water quantities for trees, shrubs, and vines.
- ♣ Aerate and fertilize lawns; begin seeding and spot seeding lawns with grass seed.
- ♣ Dig, clean, and store tender bulbs (tuberous begonias, caladium, gladiola, cannas) if frost threatens.
- ♣ Plant or transplant woody ornamentals and mature herbaceous perennials; fall planting of trees, shrubs and perennials can encourage healthy root growth over the winter.
- ♣ Plant daffodils, tulips, and crocus for spring bloom; work phosphorus into the soil below the bulbs at planting time.
- ♣ Store leftover garden seed in a cool, dry place.
- ♣ Move houseplants from outside to inside once night temperatures fall below 55F; gradually decrease light to acclimate the plants and help reduce leaf drop. Check and control insects and diseases before putting these plants near other houseplants.
- ♣ Dig and save coleus, wax begonias, impatiens or fuchsia for indoor growing over winter. Cut them back about halfway; or take cuttings of shoot tips, and root them in moist vermiculite, soil mix or perlite.
- ♣ Protect tomatoes and/or pick green tomatoes and ripen indoors if frost threatens.
- ♣ Mulch carrot, parsnip, and beets for winter harvesting.



**Average first frost in Helena is  
October 2<sup>nd</sup> (give or take 2  
weeks)**



## Recipes of the Month

### Kathy Rucker

#### Look at My Bikinis!

One of our family's first attempts at gardening was planting zucchini in front of our home. What excitement the kids had when the first squash appeared! There was so much excitement that Scotty wanted all the neighbors to come over and "look at my bikinis".

Zucchini is an easy to grow vegetable. Once the blossoms appear, be sure to check the plants often, because the zucchini seem to mature overnight. Pick zucchini squash when its less than 8 inches long. If you find your zucchini has grown to astronomical size, consider using it as a doorstop or save it to fight off bears as a woman in Western Montana did last year.

Over the years, I've made many different recipes with zucchini – including zucchini marmalade, pizza, breads, muffins, and cakes. Grilled zucchini is a treat especially if combined with tomatoes or peppers. Zucchini is used in all types of cuisine from tasty French dishes ala Julie Child to Greek appetizers. There's even a cookbook available on Amazon.com devoted to zucchini and other squash recipes.

#### Zucchini-Crusted Pizza

3 ½ cups coarsely grated zucchini  
 3 eggs, beaten  
 1/3 cup flour  
 ½ cup grated mozzarella cheese  
 ½ cup grated parmesan cheese  
 1 Tbsp. minced fresh basil leaves (or ½ tsp. dried basil)



Salt the zucchini lightly and let it sit for 15 minutes. Squeeze out the excess moisture.

Combine all ingredients. Spread into an oiled 9 x 13 inch pan. Bake 20-25 minutes at 350° – until the surface is dry and firm. Brush the top with oil and broil it, under moderate heat for 5 minutes.

Pile all of your favorite pizza toppings on (tomato sauce, olives, mushrooms, peppers, cheese, etc.). Bake an additional 25 minutes. Serve hot, cut into squares with a big tossed salad.

From **Moosewood Cookbook**, Mollie Katzen

#### Zucchini Crisp

*This really does taste like apple crisp!*

5 cups peeled and seeded zucchini cut into small chunks  
 1/2 cup lemon juice  
 1 cup sugar  
 1 tablespoon cinnamon  
 1 tablespoon cornstarch



Cook 10-15 minutes until soft. Add cornstarch to thicken.

Crust:

1 1/2 cups flour  
 1 1/2 cups brown sugar  
 1 1/2 cups oatmeal  
 2 sticks butter or margarine

Put 1/2 the crust into a 9x13 cake pan. Pat down and bake for 10 minutes at 350°. Add zucchini mixture and put remaining crust on top. Bake an additional 20-25 minutes at 350°. Tastes great warm or chilled.

## Ask the Experts

We all have questions about our gardens, lawns, trees, flowers or other landscape projects from time to time. Ever wish you could ask an expert in the field for answers to your questions? Here's your chance! In each issue of the newsletter we will answer one or more questions posed by our readers. Send in your questions to [HelenaMasterGardeners@hotmail.com](mailto:HelenaMasterGardeners@hotmail.com) and we will pass the questions on to our expert panel for answers.



**Brent Sarchet**, Lewis & Clark County Extension Agent

### Q. What should I do with the bees I found in the soffit of my house?

**A.** Recently I have received several calls from worried homeowners who have bees that have set up residence in places that the homeowners wish they hadn't. I enjoy getting these calls because it means that the homeowner decided not to take the easy option and just kill the bees. By calling me, they took the initiative to try and safely relocate the bees.

As long as I can access the bees with minimal 'home demolition', I am glad to work with homeowners, remove the bees, and hopefully transplant them successfully in a hive. Other local beekeepers will do bee removal as well. The Montana Department of Agriculture has a list of local bee keepers that you could contact.

Some of my 'bee removal adventures' include: removing them from an old school house, the Helena Middle School Auditorium vent, the soffit of a pawn shop in town, and collecting a swarm in the backyard of a Helena resident.

Bees are important pollinators of many of the foods we enjoy every day, so it is important that we preserve the population that we have. If you or your neighbors have bees that you would like to have relocated, contact our office and we would be glad to assist you.

Brent Sarchet, MSU/Lewis & Clark County Extension Agent  
[bsarchet@montana.edu](mailto:bsarchet@montana.edu)  
 447-8350



## Pollinator Facts

**American Beekeeping Federation:** <http://www.abfnet.org/displaycommon.cfm?an=1&subarticlenbr=14>

- ♣ Honey bees contribute over \$14 billion to the value of U.S. crop production. Many of the country's crops would not exist without the honey bee at bloom time.

**US Fish and Wildlife Service:** <http://www.fws.gov/pollinators/PollinatorPages/AboutPollinators.html>

- ♣ Of the hundred or so crops that make up most of the world's food supply, only 15% are pollinated by domestic bees, while at least 80% are pollinated by wild bees and other wildlife
- ♣ Honey bee poisonings result in annual losses of \$13.3 million
- ♣ Bees recover slowly from **insecticide** spraying and other disturbances because of their low fecundity (they are unable to reproduce rapidly or in great numbers) which also makes them more susceptible to local extinction. It may take 3 to 4 years for bumble bee populations to return to pre-pesticide application levels
- ♣ Climate change has the potential to affect the distribution of pollinators and the plants they pollinate, as well as the timing of flowering and migration



## Plant Profile: *Campanula* -The Versatile Bell Flower

### Joy Lewis

The family Campanulaceae encompasses a wide variety of mostly bell, and some starry-shaped flowers. It includes 70 genera and 2000 species and grows throughout the northern and southern



Hells Bells or *Campanula rapunculoides* L.

hemisphere. In our area we might know this flower as the dreaded “Hell’s Bells” or *Campanula rapunculoides* L. It runs rampant through our gardens and invades our pristine lawns by dispersing seeds and creeping rootstocks. There seems to be no stopping it once it gets hold of an area.

I’ve heard say that “Hell’s Bells” came from one of the Slavic countries. Wherever they came from they are a bane to many Helena area gardeners. You can dig and dig, and remove large chunks of root but inevitably it comes back because the smallest piece of root left in the ground will sprout new plants. Repeated digging and/or applications of a strong Herbicide seem to knock it back and keep it in check, but many gardeners are understandably reluctant to use poison.

However, there are many Campanulaceae species, such as Canterbury Bells, *Campanula medium*, that are delightful in



Canterbury Bells from the author’s garden

our gardens. Campanulas can be low growing creepers or monster 36 inch plants with enormous flowers.



Harebells, *Campanula rotundifolia* L.

You can also find them growing in the wild as Harebells, *Campanula rotundifolia* L. This family most likely originated in Southern Europe and hitchhiked its way to America. Lobelia (cardinal flower) is also in the family Campanulaceae.

In general, leaves are alternate, and on the bigger varieties grow larger near the base of the plant, gradually decreasing in size along the stem to the top. Flower colors range from purple, blue, and pink, to white, and are commonly found in singles or clusters. Flowers are bisexual and fruits are berries or capsules.

Low-growing species like rich, well-drained soil in full sun or light shade. All varieties like afternoon shade because they can be heat-sensitive. The taller species, such as *C. glomerata* and *C. latifolia*, prefer alkaline soil and partial shade. Generally divide rapid spreaders, such as *C. garganica* and *C. poscharskyana* in the early spring, or fall. Species such as *C. carpatica* are likely to self-sow. The Campanula family’s only serious pest threat comes from the slug. Some have used diatomaceous earth sprinkled around the plant or a dish filled with beer with some success.

Campanulaceae is a versatile family and provides a wide variety of beautiful species from low growing rock gardens plants to taller plants for filling in borders and backgrounds. Many of them also grow very well in our 3 -5 growing zones. It might be time to consider one of these outstanding bell flowers for your garden.

#### Low growers:

*C. Carpatica*, *C. cochlearifolia*, *C. garganica*, *C. rotundifolia*, *C. portenschlagiana*, *C. poscharskyana*.

#### Larger species:

*C. glomerata*, *C. lactiflora*, *C. latifolia*, *C. persicifolia*.

#### References:

[A Field Guide to Rocky Mountain Wildflowers](#), John J. Craighead, Frank C. Craighead, Jr., and Ray J. Davis. The Peterson Field Guide Series. Houghton Mifflin Company. Boston. 1963.

[Weeds of the West](#), 5<sup>th</sup> edition Tom D. Whitson, Editor, University of Wyoming, Pioneer of Jackson Hole, Jackson, Wyoming, 1996.

[Rodales’s Illustrated Encyclopedia of Perennials](#), Ellen Phillips and C. Colston Burrell, Rodale Press, Emmaus, PA. 1993.

<http://en.wikipedia.org/wiki/Campanulaceae>

<http://www.ucmp.berkeley.edu/anthophyta/asterids/campanulaceae.html>



*Campanula persicifolia*  
Peach-leaved bellflower

## Event Schedule

### Know of an upcoming event related to gardening?

Let us know at [HelenaMasterGardeners@hotmail.com!](mailto:HelenaMasterGardeners@hotmail.com)

#### Helena Community Gardens 2012 Class Calendar:

##### **Hot Water Bath Canning**

L&C County Fairground Kitchen  
August 14, 6:00pm

##### **Pressure Canning**

L&C County Fairground Kitchen  
August 21, 6:00pm

##### **Freezing/Drying/Fermenting**

Plymouth Congregational Church  
400 South Oaks Street  
September 11, 6:00pm

##### **Cooking from the Garden**

L&C County Fairground Kitchen  
September 18, 6:00pm

##### **Putting the Garden to Bed**

Disability Rights Montana  
1022 Chestnut Street, Helena  
October 6, 2:00pm

#### Helena Area Master Gardeners' Picnic and Garden Tour

August 18th, 4:00 pm

Contact Jim and Marla Clark at [jimmarla@wildblue.net](mailto:jimmarla@wildblue.net)

#### Celebration of Herbs

Tizer Gardens

Jefferson City, MT

Saturday, September 8, 2012

406-933-8789 for more information

#### 3rd Annual Montana Master Gardener Celebration

Billings, MT

September 21 and 22

Contact Toby Day at (406) 994-6523 for more information

#### Annual Scarecrow Festival

Tizer Nature Connection

Jefferson City, MT

September 30th

406-933-8789 for more information

#### Level 2 Master Gardener Class

Helena, MT

November

Contact Brent Sarchet for more information at 447-8346

## Useful Links

MSU Extension Yard & Garden: <http://www.msuextension.org/category.cfm?Cid=5>

Missoula Plant Diagnostics Database: <http://www.co.missoula.mt.us/extension/plantdata/>

National Center for Appropriate Technology gardening publications: <http://www.attra.org/horticultural.html>

National Garden Association: <http://www.garden.org/>

Helena Garden Club: <http://helenagardenclub.wordpress.com/>

Lewis & Clark County Extension Office Web site: <http://www.co.lewis-clark.mt.us/index.php?id=75>

MSU Master Gardener Program: <http://www.mtmastergardener.org/>

Helena Community Gardens: <http://helenagardens.org>

## Contact Information

Helena Master Gardeners: [HelenaMasterGardeners@hotmail.com](mailto:HelenaMasterGardeners@hotmail.com)

Brent Sarchet, Lewis & Clark County Agricultural Extension Agent: (406) 447-8346 [bsarchet@co.lewis-clark.mt.us](mailto:bsarchet@co.lewis-clark.mt.us)

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