



The Growing Zone

A Newsletter for Gardeners of all Levels

By Helena Area Master Gardeners

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Keeping Your Produce Safe from *E. coli*

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Judy Halm

If you are like many of us, you might have sat down recently for a meal of fresh, juicy hamburger and a salad with lots of lettuce, spinach and sprouts. Then you pick up the newspaper, and a front-page article screams at you “***E. coli* Outbreak Linked to Sprouts!**” Or maybe the outbreak is linked to hamburger, or even to lettuce or spinach. All of those food staples have been linked to outbreaks of food poisoning caused by *E. coli*. But what is *E. coli*, where does it come from, and how can you protect yourself and your family from food poisoning caused by *E. coli*?

What is *E. coli* and Where Does it Come From?

There are hundreds of strains of *Escherichia coli* (*E. coli* is easier to pronounce), a bacteria that lives in the intestines of warm-blooded animals, including humans. They are part of the normal set of organisms living in our digestive systems. Most strains are not harmful, and many are beneficial, aiding in digestion, helping in the synthesis of certain vitamins, and preventing other pathogenic bacteria from colonizing the intestine. But there are some strains of *E. coli* that can cause illness, from mild food poisoning to life-threatening infections. The problem starts when we inadvertently eat minute amounts of animal or human fecal material containing the disease-causing strains.

The *E. coli* strain we have heard most about is *E. coli* O157:H7. *E. coli* O157:H7 is very hardy. It can survive for extended periods in water and soil, under frozen and refrigerated temperatures, and in dry conditions. It also can adapt to acidic conditions. Moreover, it may take only a small number of organisms to produce illness.

How does *E. coli* get into Food?

E. coli O157:H7 is particularly successful at colonizing the colons of cattle, along with other

“Washing garden produce thoroughly before eating is one of the best methods to prevent contamination by bacteria.”

ruminants such as goats, sheep, deer and elk, where it thrives without causing harm to the animals. Bacteria are shed from the colons of animal, including humans, in their feces. Incorrectly composted cattle manure that is used to fertilize fields and garden plots may contain *E. coli* O157:H7 bacteria. From there, rainfall can carry the microbe into irrigation or drinking water. Rainfall or overhead irrigation may also cause soil and bacteria to be splashed onto the leaves of vegetables. A person who harvests the vegetables may then carry the bacterium on his or her hands. Meat at slaughter houses or packing plants may be contaminated by manure stuck to cattle hides or carcasses. Contaminated surfaces, including human hands that come in contact with whole or cut produce, or other contaminated products, represent potential points of cross-contamination throughout the food system — growing, harvesting, packing, processing, shipping and preparing produce for consumption.

What Illness Does *E. coli* Cause?

Although the very young and very old are most vulnerable to long-term complications, *E. coli* O157:H7 can affect all age groups. The bacterium produces a large quantity of toxins that cause damage to the lining of the intestine. The symptoms can appear from one up to ten days after infection, and usually start with mild diarrhea, which may progress to bloody diarrhea, severe abdominal pain and dehydration over about 8 to 10 days. Life-threatening complications, which could lead to kidney failure, can develop in some individuals. Anyone displaying these symptoms should obtain medical treatment.

(continued on next page)

Keeping Your Produce Safe from *E. coli* - continued

What about Other “Bugs” in Food?

Unfortunately, *E. coli* O157:H7 is not the only microorganism that can cause foodborne illness. A new strain of *E. coli*, *E. coli* 0104:H4, has infected foods in Europe in the summer of 2011. Investigators have not definitively identified the source of the bacteria, but hundreds have been sickened and several died from the infection. Other bacteria, including *Salmonella*, *Listeria*, and *Shigella* have been linked to food poisoning outbreaks from fruits and vegetables. Parasites, viruses and bacteria are natural inhabitants of the soil, and can contaminate vegetables and fruits that are improperly handled or prepared.

Fruits and vegetables are important in our diets, providing vitamins, minerals and fiber. To keep ourselves and our families safe as we continue to enjoy produce from our gardens or our neighbor’s garden, we must learn safe food handling tips.

What Can I do to Prevent *E. coli* in My Garden Produce and Other Food?

There are a few things you can do to greatly reduce the potential contamination of food by bacteria.

Wash your hands!

- before preparing or eating food
- after using the bathroom or changing diapers or assisting others who may be ill
- after handling animals or their cages or litter boxes
- after working in your yard or garden; you might want to change out of your work clothes, too
- when you come home from shopping

Wash vegetables with potable water before eating them, especially leafy greens which may have crevices that hide bacteria. Use a stiff brush to wash potatoes, carrots or other root vegetables. Wash the skins of fruits before you cut into them with a knife. Even “ready to eat” salad mixes can benefit from a good washing.

Clean your kitchen sink and any utensils used in food preparation – cutting boards, knives, basins –before and after preparing raw foods, and before you use them to prepare any other food. A mix of bleach and water works well for this purpose.

Use potable water to irrigate your garden, if possible. If it is not possible, use a drip irrigation to prevent water contamination on the leaves of plants

Apply thoroughly composted manure to your garden; if using aged but not composted manure, apply it 120 days before harvesting crops in the garden and mix it into the soil. Clean your garden tools after working in manure or compost.

Buy locally grown produce, and talk to the producer about the handling of compost, manure and water in

the field.

COOK meats thoroughly. Ground beef and meat should be cooked to a temperature of at least 160°F/70°C. It’s best to use a thermometer, as color is not a very reliable indicator of “doneness.”

AVOID raw milk, unpasteurized dairy products, and unpasteurized juices (like fresh apple cider).

PREVENT cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after they touch raw meat. Don’t put cooked meat on a plate that held uncooked meat.

Remember, washing garden produce thoroughly before eating is one of the best methods to prevent contamination by bacteria.

References:

Colorado State University Cooperative Extension, Food and Nutrition Series, Food Safety, “Preventing *E. coli* from Garden to Plate”, No. 9.369

U.S. Department of Agriculture, Agricultural Research Service, “Agricultural Research Newsletter”, April 2011 issue

Centers for Disease Control and Prevention, “*Escherichia coli* O157:H7 and other Shiga toxin-producing *Escherichia coli* (STEC)”



More on Mulch!

Kathy O'Hern

The June 2011 issue of The Growing Zone included an article about the benefits of using plastic mulch. However, some gardeners are opposed to using plastic in their garden beds. Luckily, many organic types of mulch are available; some may even be readily available in your own yard or neighborhood!

As a review – the benefits of mulch are numerous. Mulch conserves moisture on the surface of the soil. It also acts as an insulation and moderates temperature extremes – both hot and cold. Mulch suppresses weeds, although weed diligence is always necessary! Organic mulches will slowly break down and amend the soil, improving the soil's porosity and moisture retention capacity, similar to compost. Lastly, mulches can make the garden surface look more attractive, provide walkways, and reduce maintenance.

What can be used as mulch?

Following are some types of mulches that will last one season:



Leaves – Fall leaves can be saved and used as mulch the following gardening season. They may blow away when windy and, depending upon the location, may be better used in your compost.

Grass Clippings – Lawn clippings will add nitrogen to the soil, but need to be used sparingly, no more than 1" deep. Keep the grass away from the stem to prevent burning. If a broadleaf herbicide has been used on the lawn *don't* use these clippings as mulch.

Compost – Compost packs a double punch as both mulch and an excellent organic fertilizer.

Paper – A layer of old newspapers work great as a weed barrier underneath mulch or straw. Most newspapers use soy ink today, but be sure to confirm this for your particular paper.

Hay and Straw – Readily available and inexpensive, and will break down quickly. However, be prepared for sprouting seeds.



Other mulches that decay rather quickly include shredded corn stalks and manures. What's available in your neighborhood?

These mulches will last more than one season:

Wood – There are different varieties of mulch made from ground wood, and range in shape from shredded and stringy to chipped and chunky.

Bark – Bark looks nice and is durable, but can be expensive. It may migrate out of un-edged beds.

Pine Needles – Pine needles make good mulch, but keep in mind that pine needles are highly acidic and will affect the pH of the soil.

Other mulches that will last more than one season include nut hulls, corn cobs, and sawdust.

How to apply garden mulch

Thoroughly weed the area that you intend to mulch. Break up any crusty areas that have formed on the soil surface.

Water the soil prior to applying the mulch.

If desired, install a weed barrier, such as newspaper.

Spread 4-8 sheets of newspaper, and poke a few holes for drainage. The newspaper will break down eventually, but should suppress weeds for the season.

Spread approximately 2"- 4" of your mulch of choice on top of the weed barrier, or directly on the moist and weeded ground. The finer the mulch, the thinner the layer of mulch should be. For example finely ground wood or sawdust would be spread in a 2" layer; coarsely ground wood could be spread up to 4" deep. Fine particles like saw dust can rob nitrogen from the soil, so plan accordingly if such material is used.

Keep mulch away from the stem of the plants. Think "donut," not "volcano" when mulching; leave a ring of bare soil around the base of each plant – like a donut hole.

An array of materials can be used as mulch, it's easy to apply, and has numerous benefits. Mulch is truly one of the unsung heroes of the garden!



Lincoln Community Gardens

Courtney Crowell and Jackie Heinert



Lincoln, a community of about 1000 people strong, is situated in a high mountain valley near the headwaters of the beautiful Blackfoot River. At an altitude of 4600' and just 10 miles from the Continental Divide, Lincoln's mountain climate offers a short growing season of 90 days. The spirit of the Lincoln Community Garden organization is rooted in the timeless tradition of growing much of one's own food and sharing with our neighbors.

The garden site is located on the east side of Hooper Park, in the heart of town and within walking distance from the school, senior center, library and most homes. It receives between 8-10 hours of sun daily in the summer and is in close proximity to the Park's picnic areas and public bathrooms.

The site offers space of approximately 100 feet by 215 feet, which supports twenty-five 5-by-25 foot outdoor plots.



With the generosity of the MSU/Lewis & Clark County Extension Office, a greenhouse was constructed by volunteers in 2010 as a season extender. The greenhouse is 30-by-36 feet and boasts nine 4-by-10 foot plots in raised beds. Additionally, a grant from the Lewis and Clark County Community Foundation helped the Community Garden organization erect an eight-foot deer fence around the garden site and install a tool shed.

The gardens have attained greater than 80% occupancy already this year! The greenhouse plots were an especially hot commodity in this cool climate.

Challenges so far this year have mainly related to the weather and our gardening inexperience. The greenhouse temperature was difficult to moderate in the spring when the temperature routinely dipped into the low 20s, and in July as it soared into the high 90s. A 40% shadecloth has done wonders to keep it cool and we hope to increase the mass of water barrels inside to keep it warmer at night with less electricity. The tomatoes, squash, peppers and corn seem happy enough and are producing like gangbusters.



Timing for planting outside and proper cultivars is something many of us will be working on. A few seasoned gardeners got everything out on time, but I for one did not, and ended up with stressed bolting greens!

It has been fun to watch the different methods of gardening, including 2 plots in square foot gardening. We have been blessed with few pests as of yet, though a recent tour demonstrated some aphids in the greenhouse and some sort of worm eating lettuce outside.

Please stop by and visit if you are in Lincoln, and keep watching us grow!

Recipe of the Month

Marla Clark

Zucchini Relish

5 lb zucchini, ground (as in a food processor; also, you can substitute some of that weight with cucumber)
2C onion, measure after ground
1/2C red peppers, measure after ground
1/2C green pepper, measure after ground
2 1/2 Tbsp salt
Mix all together and let stand in fridge overnight. Rinse in cold water and drain, press out extra moisture.

Mix together:

2 3/4 C sugar
1 1/2 C white vinegar (I used Bragg's)
1 tsp celery seed
1 Tbsp salt
1 tsp tumeric
1 tsp mustard seed
1 tsp cornstarch

Add to ground mixture and boil slowly for 1/2 hour. Pack in warm jars and water bath can for 15 minutes. Makes 4 pints.

Veggie Storage Tips

- ♣ To keep lettuce longer in the fridge, rinse in cold water, shake out excess water, wrap in paper towel and put in plastic bag and refrigerate for a while to crisp up. Use some and return lettuce to this packaging, and it will keep longer. Carrots can be minimally washed and stored for a long time this way too; just remove their tops.



- ♣ To store beets, cut the greens back to an inch or so to prevent them from "bleeding" and drying out; store at just above 32 degrees.

“There is no unlucky gardener, for each small success outweighs each defeat in his or her passionate heart.”

May Sarton, Plant Dreaming Deep (1968)

Gardening Calendar

Joy Lewis

Conditions during each season 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.

August

- ♣ Start pinching back new tomato, pepper and squash flowers to encourage existing flowers to develop fruit.
- ♣ Avoid planting perennial shrubs and trees during the heat of the summer unless you can provide good shading.
- ♣ Early in the month sow leafy greens in more shaded areas of the garden for fall harvest.
- ♣ Check for powdery mildew on phlox, delphinium, perennial aster, lilacs, Virginia creeper, honeysuckle crabapple, and bee balm – leaves present with grayish/whitish residue. Make sure there is adequate air flow around plants.**
- ♣ Fertilize annuals unless you've used a slow-release fertilizer mix early on.
- ♣ Shade any new transplants from direct sun.
- ♣ Continue deadheading (cutting back old spent flowers) to encourage new flower growth on annuals and perennials.
- ♣ Water regularly to provide even moisture for plants, and lay mulch around plants and in beds to conserve water.
- ♣ Harvest new potatoes and small zucchinis and cucumbers.
- ♣ Begin slowing down fertilizing perennials, particularly shrubs and fruit trees.
- ♣ Dig up and divide iris after they have bloomed.
- ♣ Prune out old lilac flowers.



September

- ♣ Harvest winter squash and pumpkins before first frost.
- ♣ Harvest garlic and onions.
- ♣ Continue deadheading and weeding.
- ♣ Stop fertilizing fruit trees, shrubs and perennials.
- ♣ Slow down watering schedules and decrease water quantities for trees and shrubs.
- ♣ Begin seeding and spot seeding lawns with grass seed.
- ♣ Fertilize lawns.
- ♣ Toward end of month plant spring bulbs.

** A systemic solution for Powdery Mildew can be purchased along with commercial Insecticidal Soap Spray at your local Plant Nursery or Home Gardening Store.

Powdery Mildew recipe:

Mix 1-2 teaspoons of baking soda and 1 teaspoon vegetable oil in one quart of water. Spray plants making sure to hit all surfaces including the undersides of leaves. You'll have to do this on a regular basis especially after overhead irrigation or a heavy rain.

Recipes adapted from "Gardening in Montana" by John Cretti.

Insecticidal Soap Recipe:

Mix 1-2 Tablespoons dish soap without bleach or degreaser to 1 gallon of water. Pour into hand-held spray bottle or pump sprayer. Make sure to shake well and spray the undersides of leaves where aphids hide.

Book Review: *Animal, Vegetable, Miracle - A Year of Local Foods*

Kathy O'Hern

It's a huge decision – committing to feed your family of four for an entire calendar year with only foods that you've raised yourself, and/or foods that were raised locally. But that's exactly what author Barbara Kingsolver and her family did.

Animal, Vegetable, Miracle

(HarperCollins, 2007) begins as the family leaves their home in Tucson, Arizona – a place that Kingsolver describes as “a space station where human sustenance is concerned.” They relocate to a 40-acre farm in an Appalachian hollow in Virginia, and begin their food adventure.

This book is a chronicle of that year. Ms. Kingsolver admits early on in the book that each family member was allowed one food exception for an item that they felt they couldn't do without, and was not grown locally. Coffee and exotic spices are two of their chosen exceptions – but these would be purchased organic, fair trade, and in the least energy-impact manner available. But out-of-season fruits and vegetables - OUT. Factory-produced meat - OUT. No citrus, no M&Ms.

This beautifully-written book is filled with poetic descriptions of life on the farm. Kingsolver describes new greens as “nature's spring tonic.” On growing asparagus, “the shoot emerges from the ground like a snub-nosed green snake headed for sunshine.” She even admires the “hulking, elongated cleverness” of the late-summer zucchini. As for weeding the garden, we “lead our favorite hoe like a dance partner, down one long row and up the next, in a dance marathon that leaves us exhausted.” And their favorite rooster, Mr. Doodle, “had a keen eye for hen safety and a heart for justice.”

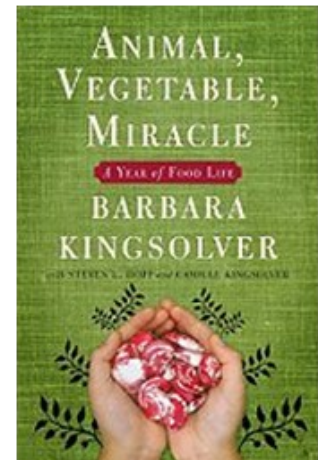
Kingsolver's husband, Stephen Hopp,

and nineteen-year old daughter, Camille, also contribute to the book. Stephen is a biology professor and provides brief, science-based essays about issues such as pesticide use, CAFOs, GMOs, global food networks, and the link between the oil and food industries. At one point, he explains that, “Americans put almost as much fossil fuel into our refrigerators as our cars. Approximately 17 percent of our nation's petroleum energy is used for agriculture.” Hopp cleverly writes, “A quick way to improve food-related fuel economy would be to buy a quart of motor oil and drink it.” More practically, says Hopp, “If every U.S. citizen ate just one meal a week (any meal) composed of locally and organically raised meats and produce, we would reduce our country's oil consumption by over 1.1 million barrels of oil every week.”

College-student Camille provides her point-of-view about her family's food project. She describes her school-mate's casual attitudes about the food they eat, and their unwillingness to engage in serious discussions with her about it during lunch. At one point Camille depicts a friend's visit to her parent's home, well-within the “local food only” project. When mom Kingsolver asks for grocery-list items, the friend innocently requests “bananas.” Not only does the friend *not* get the banana she requested, but gets a long explanation about where bananas are grown, the costs involved in transport – both monetary and energy, farm practices, and more. Camille offers a young adult's perspective on local foods, and supplies great family recipes throughout the book. Kingsolver's younger daughter, Lily, adds to the family's “locavore” by raising poultry for meat and eggs. She takes her young proprietorship of

“Lily's Lovely Layers” seriously, selling eggs with a specific goal in mind – to raise enough money to purchase her very own horse.

Kingsolver, who is known for fictional works such as her bestselling novels *Bean Trees* and *Poisonwood Bible*, doesn't portray her family's project from a “preachy” or “uppity” perspective. The book is filled with practical gardening tips, animal husbandry insights, and easy recipes. It's simply a pleasure to read. A CD of the book is recited by Kingsolver herself – along with Stephen and Camille each reading their own sections – and is a great traveling listen.



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 and we will pass the questions on to our expert panel for answers.



Brent Sarchet, Lewis & Clark County Extension Agent

Q. What does it mean if a product says it is “organic”?

The National Organic Program (NOP) was adopted by the USDA in 2002. Prior to 2002, any agricultural product could be marketed as organic without it being certified or regulated; there was no standardization or definition of “organic”, so it was very confusing to the consumer. Now, any agricultural products that are advertised as organic must be certified through an organic certifying agency. The local organic certifying agency for Montana is the Montana Department of Agriculture. However, there is an exception. Anyone who has less than \$5,000 in annual gross sales of agricultural products does not have to be certified, but does have to follow the NOP regulations.

So what about other products that are not food related, do they have to comply with the NOP? The NOP states that each production or handling operation or specified portion of a production or handling operation that produces or handles crops, livestock, livestock products, or other agricultural products that are intended to be sold, labeled, or represented as “100 percent organic,” “organic,” or “made with organic (specified ingredients or food group(s))” must be certified. Agricultural products are defined as any agricultural commodity or product, whether raw or processed, including any commodity or product derived from livestock, that is marketed in the United States for human or livestock consumption. Products such as soil amendments or pest management products that are advertised as organic are not regulated by the NOP. It is the responsibility of the consumer to read the labels and understand what the ingredients are, and what or where they are derived from. Consumers have to be cautious about what they are buying, especially if you have a certified organic operation or want to farm, garden or ranch organically. If you have questions about such products, you should contact the local organic certifying agency or the local County Extension Office.



Thankfully there is some help for the consumer when it comes to picking products that are acceptable for organic production. The Organic Material Review Institute (OMRI) is an independent organization that reviews products. If a product has a label that say “OMRI Approved”, you can be assured that it has gone through a review process to confirm the organic legitimacy of the product.

In summary, if a compost says that it is organic, flip the bag over and see what the compost is derived from. Don't believe the organic claim; investigate the product yourself or call the local organic certifying agency or your local County Extension Office.

Useful Organic Links:

USDA National Organic Program: <http://www.ams.usda.gov/AMSv1.0/nop>

Montana Department of Agriculture Organic Certification Program: <http://agr.mt.gov/organic/program.asp>

OMRI: <http://www.omri.org/>



Plant Profile: Potato

Connie Geiger

As a Master Gardener what might I need to know about the common potato?

True potatoes* are from the nightshade family (*Solanaceae*), which also includes tomatoes, eggplant, tobacco, petunias, and some types of peppers. Potatoes all are derived and hybridized from a perennial plant grown for thousands of years in South America before being introduced to Europe in the 1500s. They are a monoculture, meaning there are many varieties but all are the same species (*Solanum tuberosum*).

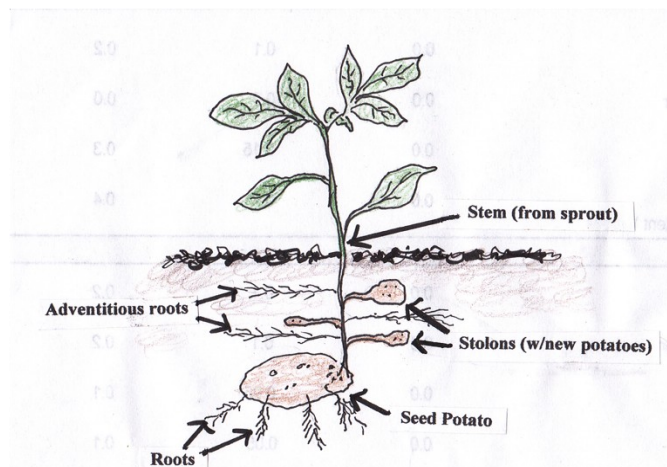
*Sweet “potatoes” are not potatoes; they are a tuber from the morning glory family (*Convolvulaceae*). Yams are tubers from the Dioscoreaceae family.

We think of a potato as a “root” crop but actually it’s the swollen apex of a modified stem (stolon) with “eyes” that are buds, like buds on a woody stem. When it’s planted, the central bud of each eye produces a shoot in one direction and roots are formed down into the ground. Then lateral stems grow out from the other eyes, which then develop swollen tips that grow into potatoes, intended to be storage units for the plant. Since these new potatoes are actually stems they can produce chlorophyll with exposure to light. All green parts of the potato plant are toxic, not because of the chlorophyll but because of a toxin called Solanine. This is a natural defense mechanism for the plant – to prevent it from being eaten by predators, or in some cases in response to damage or disease. Solanine is also found in other nightshade plants. Green under the potato skin indicates the presence of high Solanine. Consequently, commercial potatoes are



screened for Solanine levels. Removing the skin and green portion removes the majority of the toxin.

Like bark on woody stems, the skin of potatoes is actually cork – forming in the epidermis layer of the cortex. This cork prevents loss of water from the “stem”. It forms to heal wounds, which prevents decay. It also acts as an insulator. This cork layer is thin and tender when potatoes are “new”. But as they cure, after the



vine dies, and during storage, this cork layer thickens and hardens. That is why they are such an excellent storage vegetable.

Use only newly purchased Montana certified seed potatoes in your garden, to ensure the best quality production, and to ensure the future health of Montana potato crops. Some diseases affecting potato plants are easily spread, even from a small garden. Buying and growing non-certified seed can potentially bring diseases to Montana crops with devastating affects. The disease of most concern is a

fungal disease called late blight. It is highly destructive, and in fact was the cause of the great famine in Europe in the mid 1800s, because it destroyed the potato crops as it spread through Ireland, England, and the rest of Europe. The fungus grows in the leaves and stems, the spores of which escape out the stomata where they can be easily spread by wind and splashing rain. They can then infect other plants, sometimes spreading for miles. They can also be washed into the soil where they germinate and can penetrate into the tubers which could spread the disease when planted next year, or when tossed into a compost pile. So when buying seed potatoes look for the blue or red tag, or certificate, on the store display that says “Montana Certified Seed Potatoes”.

How is growing seed potatoes different than just growing potatoes?

Over 12,000 acres are planted in seed potatoes in Montana, the majority of which are grown in Lake, Richland, Dawson, Beaverhead, Madison, Gallatin and Broadwater counties. Montana growers are often both commercial and “seed” growers, of primarily russet potatoes, but also of other varieties – red skinned, gold fleshed, heirloom, purple skinned, and blue and red fleshed. Montana growers have a difficult time competing with large commercial growers because of our distance from larger markets and because our short growing season can sometimes produce smaller potatoes. However, Montana is ideal for growing seed potatoes because the deep frost levels of our long cold winters kill the majority of potato pests. Our cool weather also increases the amount of solids in our potatoes (vs. water content) which makes a more viable seed potato. Montana has a national reputation for producing seed potatoes certified to be free of viral, bacterial, and fungal diseases, and they are sold to commercial growers throughout the United States.

(continued on next page)

Plant Profile: Potato - *continued*

This reputation is due to a certification program that dates back to 1921, and is implemented by Montana State University. The program involves the voluntary participation of growers to adhere to MSU's strict rules and regulations, including rigorous testing and inspection requirements. Additionally, the program includes ongoing research by MSU for improving seed potato production in Montana.

Each spring seed growers germinate the previous season's seed potatoes and treat them with desiccants and late blight fungicides. Any seed that is not planted (culled) must be destroyed by June 1st. When planted, commercial potato fields and seed potato fields must be separated by at least 20 feet. MSU inspects the cull piles, and later does field inspections for diseases (i.e. blight, root knot nematode, bacterial ring rot, etc). At the end of a growing season potato farmers spray the plants with a defoliant that kills the vines (or the vines are chopped mechanically), to hasten the maturing of the potatoes so they can be harvested before the hard frosts of fall. After a few weeks they are harvested and must pass a final inspection, lab disease tests, and grade

requirements. Larger potatoes are sold commercially (i.e. to North Dakota for French fries). The smaller potatoes are treated with a sprout inhibitor (maleic hydrazide, CIPC or chlorpropham*) and are stored for seed. Throughout the planting, growing, and harvesting process the growers follow strict guidelines for sanitation to prevent disease contamination (including cleaning and disinfecting equipment), as well as meeting highly regulated storage requirements.

*This same sprout inhibitor is used on commercially grown potatoes that are sent to food markets.

Growing and harvesting tips:

Potatoes can be planted in trenches and "hilled" as they grow taller. They can also be grown solely under heavy mulch for ease in harvesting "clean" potatoes. Do not add fresh manure after planting, since it can increase the chances of a disease called scab. Harvest "new" potatoes when the plants are flowering. Once frost has killed the plants in the fall, wait a couple weeks before digging and storing, to allow their skins to toughen to protect them from

damage during harvest. Once harvested keep them away from light sources to prevent "greening", and allow them to cure for a couple weeks at temperatures of 50-60 degrees. If you prefer sweeter potatoes drop the storage temperature to 40 degrees, which will also inhibit sprouting.

You can breed your own varieties of potatoes from actual seeds from the tomato-like seed heads. It requires consecutive select growing over several seasons



because potatoes are genetically unstable. For more details on how to grow potatoes from harvested seeds go to

<http://www.growseed.org/potato-breeding.html>

Volunteer for Veggies!

The Growing Community Project is a diverse group of individuals and organizations that are working together to develop community gardens within walking distance of every neighborhood in Helena, Montana. We aim to build community gardens, based on community support, which bring together diverse neighborhoods so that we may create community while addressing food security issues. The project is a collaboration between WEEL (Working for Equality and Economic Liberation) and AERO (Alternative Energy Resources Organization). Three community gardens in Helena have VFV plots. The produce from the plots goes to the Helena Food Share but volunteers can take some home, too! Workdays are scheduled throughout the summer. Caroline Wallace, VFV Volunteer Coordinator, Alternative Energy Resources Organization, Office: (406) 443-7272 / cwallace@aeromt.org

Food Share Garden (1616 Lewis Street)

Summer Schedule: Mondays from 5:30 – 6:30

VFV Managers: Katy Moore and Eric Walliman

Plymouth Garden (400 S. Oakes)

Summer Schedule: Thursdays from 5:30 – 7:00

VFV Manager: Marty Steenberg

Selma Held Garden (Selma Held Park)

(corner of Beltview and Saddle Dr)

Summer Schedule: Mondays from 5:45-7:00

VFV Manager Liz Campbell



Event Schedule

Know of an upcoming event related to gardening?

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

Food Preservation—Waterbath Canning

Thursday, August 18th
5:30 pm to 8:30 pm
Kitchen at the Lewis & Clark County Fairgrounds

Food Preservation—Pressure Canning

Thursday, August 25th
5:30 pm to 8:30 pm
Kitchen at the Lewis & Clark County Fairgrounds

Level II Master Gardeners Training

Thursdays, 5:30 pm to 8:00 pm
September 8th through October 27th
Lewis & Clark County Extension Office, 447-



The Growing Zone Logo Challenge!

The Newsletter Committee would like to extend a call to artistic gardening enthusiasts to design an appropriate logo for *The Growing Zone*. Submit your design to HelenaMasterGardeners@hotmail.com or deliver it to the County Extension Office. Please submit your design as a .jpg file or on a document that can be scanned. The winner of the Logo Challenge will receive a 1-year subscription to the “Big Sky Small Acres” magazine.

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://gardenguide.montana.edu/mgardener/mgardenerindex.asp>

Growing Community Project: <http://helenagcp.wikidot.com/>

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