



A Newsletter for GARDENERS OF ALL LEVELS

By Helena Area Master Gardeners



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If you have questions or comments, or would like to submit an article or tips and hints, contact us at HelenaMasterGardeners@hotmail.com.

Ready... Set... Start Your Seeds!

Charlotte Bowenhollow

If you want to grow your own seedlings for the garden, you will need to find time and some space indoors. The trade off is great satisfaction and even a little magic when the seeds sprout and the adventure begins. Within your space you will organize seeds, growing medium, containers, moisture and lighting; all upon some available surface, possibly shelves. Let's start with...

The Seeds and Planting Dates

If you use seeds from a prior year, check viability by doing a "ragdoll test" to determine the germination rate of the seeds. For information on how to do a "ragdoll test" visit this site, <http://edis.ifas.ufl.edu/ag182>. Conduct the test prior to planting to allow time for sourcing new seeds if you find your old seeds are not viable. Read the seed label to determine whether you should direct seed outdoors or start indoors as transplants. As an example, tomatoes and peppers are started indoors and beans and peas are seeded outdoors. To determine the date you should plant your seedlings, first you must know your last frost date in spring. For the Helena area, that date is usually the last week of May. From that date, go backwards in the calendar 6 to 10 weeks (depending on the seed) to determine when you should start the seeds indoors or plant outdoors. The seed label will usually indicate the number of weeks prior to the last frost.

is delicious. Harvest baby greens in just 25 days. This packet plants five 10 foot rows.

When to sow outside: 1 to 2 weeks before average last frost. For continual baby greens, sow successively every 3 weeks. Sowing 8 to 10 weeks before first fall frost is recommended as kale tastes best when exposed to cold temperatures. In mild winter climates, sow in fall for late winter harvest.

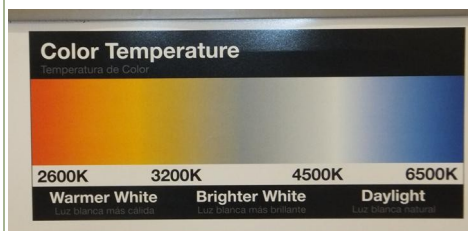
When to start inside: 8 to 10 weeks before average last frost for transplanting outside 4 to 6 weeks before average last frost.

Placement and Light Sources

Lighting is a critical part of successful plant growth. It would be easier if we could use our every day lights or windowsills for growing veggie starts, but incandescent bulbs are inefficient and too hot, CFLs are too small and outdoor light is unpredictable and insufficient in most of our homes.

There are numerous options for lighting. Standard fluorescent lights, usually the tubes seen in "shop light" fixtures, are the most economical and convenient for the indoor gardener. Most sources seem to recommend using only full spectrum lighting but many use both a warm and cool light for their fixtures. The proper amount of light will yield more uniform and vigorous seedlings.

Here is the "illuminating" story of light. Color temperature is a characteristic of the visible light spectrum and this emitted light is described by the unit "Kelvin." Light with higher color temperature looks more like natural daylight (5500 to 6500K) and provides the full light spectrum (the sun's color temperature is about 5900K).



Ready... Set... Start Your Seeds! ... *continued*

These higher, cooler temperatures (e.g., 6500) give off a bluish-white tint. The lower, warmer temperatures are in the more reddish-yellow range, such as soft white (2500 to 3000K). Since plants are primarily green we know they reflect mostly the green parts of the spectrum and the blues and reds are best absorbed. Those who choose both a warm and cool white light usually follow the belief that higher color temperatures best encourage vegetative growth and the lower ones best support flowering and fruiting.

Shop light fixtures and basic fluorescent lights are not expensive. It is convenient to use wire shelves with adjustable chains and hooks to suspend the lights above the planted containers. It is generally agreed to have lights on 14-16 hours a day with an 8 hour dark period. Automatic timers are a great help in keeping to this schedule. Because fluorescents emit very little heat, newly germinated and seedlings less than 4 inches can have the lights 1-2 inches above the plants. Closer to transplant time, raise the lights to 2-3 inches.



Planting Material

Use a sterile planting mix, available at local garden stores, which contains no soil so there will be no pests or diseases to deal with. These soilless mixes are primarily sphagnum peat moss, some vermiculite or perlite, providing moisture retention, water drainage and air circulation. If you use garden soil, be sure it is sterilized, to avoid such things as the fungi that cause the damping-off.



Containers and Temperature

Almost any container will do, old milk or egg cartons, peat pots/pellets, Dixie cups, plastic flats, seed starting trays, etc. The peat pellets are “labor-savers” and transplant to larger containers or outside easily but may be less feasible for mass quantities. If you reuse containers, clean them in soapy water and then disinfect in a water bleach solution (10:1).

Moisten the mixture before filling containers or place them in $\frac{1}{2}$ - $\frac{3}{4}$ “ water, for those that have permeable bottoms, just to moisten. Sow seeds at a depth of 2 - 2 1/2 times the seed diameter. Seeds that need light to germinate, often the smallest ones like lettuce, should not be fully covered with mix. Remember to mark your various plant types, a very worthwhile step! Once seeds are in the moist soil, cover the containers with a clear top or plastic wrap so the medium and seeds **will not**

dry out before they germinate. Do not seal off air, as mold may form without circulation. Place containers away from direct light and when the plants appear remove covering and place under lights. Planted containers do best with a bottom temperature of 65°-75°F and you can be creative using a warm source in the house or use heat mats specific for seed germination.

Water and Fertilizer

Seedlings require moisture to grow and how this is delivered depends on the containers you are using. Some flats have holes in the bottom and can be set in larger trays containing tepid water. Watering from the bottom up prevents disturbing seeds or wet leaves later on. The planting medium should be moist, not soggy which leads to a variety of problems. A mist now and then is also a useful technique. Remember seeds need adequate ventilation to grow well.

Use a complete liquid fertilizer of your choice when the cotyledon “leaves” are gone and first true leaves appear. Liquids allow fast action and easier regulation than solids. Fertilize with a diluted mixture once a week until transplanted to a larger container or planted outside.



Ready... Set... Start Your Seeds! ... *continued*

Transplants

Many of your plants will outgrow their first containers and need more space before you put them outside. For peat pellets slice the bottom netting and place in the soilless mix in larger pot. If you transplant bare root, hold the seedling by the leaves or root system, not the slender stem. Return transplants to the lights, increasing distance from light to 2 - 3" but allow drooping plants a shady spot for a day to perk up.

Transplants need less water, tolerate full strength fertilizer and the mixture may dry out temporarily. Mist to maintain humidity and allow airflow; sometimes, a light fan breeze can also provide some "exercise" akin to hardening in the open air. In fact, www.garden.org suggests "brushing" of seedlings, with a piece of typing paper, cardboard tube or wooden dowel, about 40 strokes in a minute and a half, up to twice a day. This results in shorter, stronger and greener plants, according to their editors. I'm looking forward to trying this!

A week to ten days before planting outside, cut back on water and stop the fertilizer. Start with a half day outside in 50° weather in sheltered area protected from strong winds and be sure to keep your plants watered. Over the week, increase exposure to sunlight, wind and a range of temperatures. If possible, plant on a cloudy day and if the weather is hot and sunny you can use shade cloth to help the more fragile ones make the transition.

For final planting follow seed package instructions for light requirements and soil/air temperatures. (Remember to rotate your crops annually.) Hope you have a healthy and productive harvest!

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http://www.gardeners.com/How-to-Choose-a-Grow-Light/5020_default.pg.html

http://en.wikipedia.org/wiki/Color_temperature



Spring Tune-up for Your Garden Soil

Ann Prunuske

Before you take a long road trip, you take your car in for a tune-up, check the fluids, adjust the tire pressure, etc. Before you take your garden on its new season of growing, it's wise to consider a tune-up for your soil. A soil test will help you determine if you're low on certain nutrients.

For about \$30.00 you can have your soil tested for organic matter, available nitrate-nitrogen, phosphorus, potassium, sulfur, sodium, pH, salt hazard, lime, and texture.

The first step is to collect a representative sample. There are different tools you can utilize to take a soil sample. The Extension Office has a soil probe to borrow. You can also use a tulip bulb planter. If you use a shovel, dig a 6 to 8-inch hole. Take a 2-inch thick slice out of the hole and put it in a bucket. Repeat in 6 to 8 other areas in your garden and add each of those to the bucket. Mix well. Fill up a quart-sized Ziploc plastic bag and bring it to the Lewis & Clark County Extension Office, 100 W. Custer (in the Fairgrounds). For more information on soil sampling and testing, contact the Extension Office, 447-8346.



Salsa Peppers—Some Like it *Hot!*

Ann Prunuske

Did you know that salsa outsells ketchup in the United States today? Once considered an ethnic food, salsa is now as American as apple pie. Gardeners are enjoying the rich flavors found in the bolder cousins of the sweet bell pepper. Anyone can make a ho-hum, run-of-the-mill salsa with green bells. It is a lot more fun and interesting to make salsas with different kinds of peppers. While some salsa peppers are grown for their heat, many are grown for their unique flavor. The smoky flavor of pasillas, the fruity tang of anaheims, the distinctive earthiness of jalapeños, and the sweet spicy zest of Hungarian wax peppers become a new and exceptional salsa.

Growing peppers for salsa in Central Montana is a bit of a challenge, but it can be done. Peppers love the heat, and hate the chilly wind. Find or construct a sheltered site – the hottest available - use season extenders such as Wall-o-Waters, and chose varieties carefully. Start young plants inside around the end of February.

For years I have grown several dozen plants on my deck in 3 gallon pots. Each pot was encircled with a Wall-o-Water and placed out of the wind in my hottest location. I have also had success in a raised bed sheltered with the wavy fiberglass panels used for carports. A 4' x 12' bed surrounded by the panels became a nice micro-climate.



Bhut jolokia

Some pepper varieties simply take too long for our short growing season. I have given up on Habaneras and Scotch Bonnets. One year I tried the fabled Bhut Jolokia (1,000,000 Scovilles) – only one of its fruits matured and it wasn't all that hot. Generally, I try to stick with peppers that mature within 75 days. It's possible to keep the plants growing well into October, but it's nice to have sufficient ripe peppers at the same time as a hefty crop of ripe tomatoes. Then the crafting of unique salsas with a full palette of flavors becomes a joy.

Though peppers are grown as annuals in our area, plants can live up to 15 years or more. If you plan on overwintering some of your plants indoors, check carefully for aphids, and make sure you can provide 12-16 hours of light.

Note: Peppers become hotter as they ripen. The hottest part of a pepper is the white pith attached to the seeds. Hotter summers produce hotter peppers. Roasting or broiling peppers brings out the flavor.

Tip: If you're having a salsa-making party, invest in a box of disposable gloves.

Rating Pepper "Heat"



The **Scoville scale** is the measurement of the pungency (spicy heat) of chili peppers or other spicy foods as reported in Scoville heat units (SHU), a function of capsaicin concentration. The scale is named after its creator, American pharmacist Wilbur Scoville. His method, devised in 1912, is known as the Scoville Organoleptic Test.

Police-grade pepper spray is 5,300,000 SHUs
Common pepper spray is 2,000,000 SHUs

The web site Cayenne Pepper Guide has the following chart to provide a better description of pepper heat:

- ◆ Mild: 0 to 5,000 SHUs
- ◆ Medium Hot: 5,000 to 20,000 SHUs
- ◆ Whew! Noticeably Hot!: 20,000 to 70,000 SHUs
- ◆ Really, Really Hot: 70,000 to 125,000 SHUs
- ◆ Whoa! Really, Extremely, Uncomfortably Hot: 125,000 to 500,000 SHUs
- ◆ Really, Extremely, Uncomfortably, Shockingly, Woefully Hot: 500,000 to 1,250,000 SHUs
- ◆ Devilish-Hell-Fire, *I-Wish-I-Were-Dead !!* Hot: 1,250,000 to 16,000,000 SHUs

<http://www.cayennepepper.info/cayenne-pepper-heat-units.html>

Some fun peppers I have grown successfully in Lewis & Clark County:

Ancho (OP) – 75 days. Mildly hot – 1000-2000 Scovilles. Known as poblanos when fresh, and anchos when dried. Sometimes dried and ground into powder for spice rubs or chilis. One of the best for chile relanos. Sweet-smoky taste, with a slight hint of 'raisin.'

Anaheim (OP) – 75 days. Mildly hot – 500-2,500 Scovilles. Probably the most well-known chile pepper. Also used for chile relenos, but more slender than the stockier Ancho. 7 ½" long by 2" wide. A bit of 'fruitiness' in the taste.

Bulgarian Carrot (Shipkas) (OP)– 67 days. Medium hot – 2,000-5,000 Scovilles. 3 ½" fruits glow bright fluorescent orange and really do resemble carrots. Heirloom. Supposedly smuggled out from behind the iron curtain in the Cold War days. Fabulous in chutneys and salsas.



Cajun Belle Hybrid – 60 days. Mildly hot – 100-1,000 Scovilles. 2010 AAS selection. Looks like a miniature bell pepper 2-3" lobed. Sweetly spicy. Very early.

Cherry Bomb Hybrid – 65 days. Medium-hot –2,500-5,000 Scovilles. Explodes with a rich, sweet taste. Thick-walled round or oval fruit 2-2 ½".

Salsa Peppers—Some Like it Hot! ... *continued*

Fooled You Hybrid – 65 days. A non-hot jalapeno. Bursting with jalapeno flavor and perfect for mild salsas. 3 1/2" fruits.

Garden Salsa Hybrid – 73 days. Medium heat – 1,000-5,000 Scovilles. Smooth 8-9" long by 1" wide. Perfect for salsa, picante sauce and various Mexican dishes. Delicious flavor.

Hungarian Wax (OP) – 70 days. Fairly hot – 5,000-8,000 Scovilles. Don't confuse this with Sweet Banana peppers! Matures from canary yellow to bright red – a beautiful plant. 6-8" fruit. Very versatile – use as a sub for jalapeno, pickle, stuff with meat or cream cheese, or make into pepper jelly.

Inferno Hybrid – 60 days. Moderately hot Hungarian wax pepper – 2,500-5,000 Scovilles. Early bumper crops of 8" fruit. Sweet, but with a kick. Superb pickled, fried, or roasted.

Long Slim Cayenne (OP) – 75 days. Very hot – 35,000-45,000 Scovilles. Heirloom known to be of pre-Columbian origin. Hot, zesty, and pungent. 6" long but only 1/2" wide. Dry and grind, spice up dishes, or decorate a Xmas tree with these.

Mucho Nacho Hybrid – 75 days. Hot – 4,000-8,000 Scovilles. Longer, fatter, and hotter than your average jalapeno. 4" long. Very productive. Stuff, pickle, or use in salsa.

Numex Big Jim (OP) – 80 days. Mild–500-1,000 Scovilles. The largest of the New Mexican chilies with pods up to 12" long. Selected by the Chile Pepper Institute of Mexican State University. Sublime flavor with just a hint of spice. Fantastic for roasting, smoking, or stuffing.

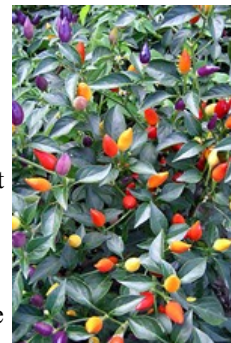


Pasilla Bajio (OP) – 75 days. No heat <500 Scovilles. Pronounced "pah-SEE-yah." The name translates to "little raisin." Rich, smoky taste. Up to 10" long

skinny pepper that mature from dark green to dark brown. The pepper of choice for mole sauce, but adds much flavor to salsa.

Serrano del Sol Hybrid – 64 Days. Nicely hot – 4,500 – 5,500 Scovilles. Earlier and bigger than the original open-pollinated Serrano. Unique flavor much valued in Mexican cuisine. Versatile – use in sauces, salsa, or just for flavor. 3" long.

Thai Hot (OP) 80-90 days. Very hot – 12,000-30,000 Scovilles. A small plant perfect for containers, very ornamental. Extremely hot 1" fruits held erect on the plant. Sometimes preserved in oil or vinegar, but also can be used to "spice up" your favorite salsa.



Just for fun:

Bolivian Rainbow (OP) 80 days. Very hot – 40,000 – 50,000 Scovilles. An absolutely lovely plant with purplish leaves and purple flowers. Tiny, cone-shaped 1" fruit starts out purple but turns to yellow, orange and finally red. This is a great "double-dog-dare-you" pepper!

The peppers listed above are by no means a complete list a varieties possible to grow in our area. Please share with us the names and characteristics of peppers *you* have grown. Email us at HelenaMasterGardeners@hotmail.com.

"It was one of those March days when the sun shines hot and the wind blows cold: when it is summer in the light, and winter in the shade."

- Charles Dickens

Knowledge is knowing that a tomato is a fruit; wisdom is knowing not to put it in a fruit salad.

"March is a month of considerable frustration - it is so near spring and yet across a great deal of the country the weather is still so violent and changeable that outdoor activity in our yards seems light years away."

- Thalassa Cruso

Botanists have developed a vegetable that eliminates the need to brush your teeth: Bristle sprouts.

Xeriscaping: What Is It and Is It For You?

Carol Ballew

Xeriscaping might make you think of dry stone creek beds, large expanses of gravel, cactus and you probably aren't interested. If you want to reduce your water bills and save other resources, maybe you should reconsider. My interest in xeriscaping developed very suddenly when I got the first summer water bill after creating a cottage garden in my front yard – the bill went from less than \$30 in late winter to more than \$100 in mid-summer. Xeriscaping conserves water and also reduces the need for fertilizer, pesticides, and labor.

Xeriscaping was developed by Denver Water, the city's utility company. In the 1990s, the city faced water shortages and realized that more than one third of the city's water was being used on yards and gardens (Denver Water and the American Water Works Association, 1996; see References). Denver Water and the Colorado State University Extension developed landscape designs that did not need supplemental water after they were established, except in years of severe drought. Some people find not watering at all too limiting, depending on the plants they really love. However, we can all agree with the basic goal of xeriscaping: **Quality landscaping that conserves water and protects the environment.**

In the Southwest, where xeriscaping caught on in a big way, it often does take the form of boulders, gravel, and cactus. However, xeriscapes don't have to be radical. With careful plant selection and attention to the principles of xeriscaping, you can create any style of landscape that complements the architecture of your house, fits in with your neighborhood, and pleases you aesthetically. The key is to choose dry-adapted plants for the sizes, shapes, and colors that create the look you want, rather than automatically choosing particular species of plants.



A cottage in Denver xeriscaped with echinacea, yarrow, sedum, Russian sage, roses, and potentilla.

All of the references on the subject list The Seven Principles of Xeriscaping, which are really no different than the principles of good gardening in general, with the exception of # 4.



A more formal xeriscape in Denver; birches in background have supplemental drip lines. Notice there is some turf.

1. Planning and design

Map your yard to locate activity areas, sun and shade zones, wind direction, and microclimates that will affect layout and plant choices. It is important to stabilize slopes to prevent erosion and water run-off. Trees and shrubs help in this, and they add value to the property, so leave them in place if possible.

2. Soil improvement

The soil in my yard, like much of the soil in Helena, is shallow and mostly decomposed granite. The best approach is to amend it with compost to add nutrients and help the soil retain moisture. Many dry-adapted plants grow slowly and are therefore not heavy feeders, so compost may be all the fertilizer they need. High nutrient levels encourage plants to grow rapidly, increasing their water needs. You may also want to create raised beds to accommodate the deep root systems of many dry-adapted plants.

3. Plant selection

You don't have to be limited to native plants, but they are a good place to start. They are adapted to the local conditions – soil, temperature, wind, and sun as well as rainfall. You can also use non-native plants that have the same needs and characteristics as successful natives. Plants that are well-adapted to the conditions where they grow need less supplemental water.

There is no consensus about terminology for xeriscape plants. Many descriptions include phrases like drought-resistant, drought-tolerant, dry-adapted, or well-drained soil. These phrases are helpful indicators but they do not guarantee a successful xeriscape plant. Cultivars described as weedy or invasive may not be aggressive in a xeriscape. With limited water and nutrients, they may just be vigorous and reliable (except hell's bells (creeping bellflower) and some other weeds, which will always be garden outlaws).

Xeriscaping: What Is It and Is It For You? ... *continued*

I choose plants by trial and error. My policy is: if it does well, plant more. A list of plants I am having good luck with in my Helena xeriscape is included at the end of this article. There are some helpful books about plant selection for xeriscaping in the Rocky Mountain region or other cold climates. Several books and websites are listed in the References section.

There are clues in the plants themselves. Dry-adapted plants have efficient mechanisms to acquire and store water and minimize water loss. Many have long tap roots, fleshy water-storage roots, or large root networks. Native prairie plants have root systems that are deeper than the height of the plant. Like icebergs, much more of their mass is below ground than above ground. Dry-adapted plants often have waxy, leathery, or fleshy leaves, or their leaves may be hairy or fuzzy, making them look grey or silver. Finally, plants doing well without care in dry areas on roadsides, vacant lots, and abandoned homesteads are good bets. I see lilacs, Harrison's yellow roses, daffodils, irises, and hollyhocks thriving on neglect in my neighborhood all spring and summer.

4. Limit turf

This is where xeriscaping diverges from general good landscaping practice. Turf lawns are not natural. They are monocrops, big areas of one kind of plant. Monocrops are especially vulnerable to pests and you have to work hard to keep weeds out of a lawn. Worst of all, from the xeriscaping perspective, common turf grasses have shallow root systems so they need a lot of water at frequent intervals. They may also require fertilizer, pesticides, and frequent mowing.

You may want some lawn areas for children and pets, or just for looks. Some species of turf grass have lower water requirements than others. Some newly developed seed mixes have deeper root systems and grow slower than conventional turf grasses. Some attractive native grasses such as buffalo grass (*Bouteloua dactyloides*) and blue grama (*B. gracilis*) do well in xeriscapes.

You might consider low-growing ground covers instead of turf grass for areas that do not get a lot of foot traffic. Some ground covers tolerate being walked on a little, and you can always use stepping stones or paths to direct traffic. Several hardy creeping forms of thyme (*Thymus praecox*, *T. pseudolanuginosus*, *T. serpyllum*), creeping phlox (*Phlox subulata*), carpet bugle (*Ajuga reptans* cultivars), the lower-growing sedums (*Sedum* spp.), and creeping yarrow (*Achillea tomentosa*) all do well here and require almost no maintenance. Even common tall yarrow (*A. millefolium*) can be mowed to create a dense, resilient and drought-tolerant green ground cover that tolerates foot traffic fairly well.

5. Efficient use of water

This is the heart of xeriscaping. If you have an irrigation system, it may be the biggest challenge to switching to a xeriscape. A transitioning xeriscape needs some water for the first couple of years. Anything newly planted needs supplemental water: trees for as long as three to five years, shrubs for two, perennials for one or two. Once established, a xeriscape need much less water than a lawn irrigation system is designed to deliver. Vegetables (except perennials like asparagus), annuals, and containers are always newly planted and need supplemental water.

There are several watering guidelines we all know, whether we are xeriscapers or not:

- Soakers or drip lines are more water-efficient than sprinklers. Much of the water sprayed into the air by sprinklers is lost to evaporation or misdirection.
- Calibrate any system so you water enough, but not too much. I use a cat food can set under a section of my soaker.
- Put soakers or drip lines under the mulch so the water reaches the soil.
- Don't put soakers against plant stems.
- Water deeply but infrequently to encourage plants to develop deep root systems.

Consider rain barrels. A quarter inch of rain on a 1,000-square-foot roof yields 150 gallons of water. Rain barrels are conspicuous but you can plant shrubs or vines to hide them or spray paint them to match your siding. Rain barrels capture water that would otherwise be lost to runoff and allows you to use the water when and where you need it most.

I don't use household grey water in my yard. It is usually alkaline and Helena soils don't need more alkalinity. Grey water usually contains phosphates and other detergent residues that get into the soil and eventually into the ground water, although you can switch to soap for laundry and dishes to reduce the phosphate content. I don't know whether the chemicals in soaps and detergents might harm soil microorganisms or bind micronutrients in the soil. Many cities have ordinances against it, although Helena does not so you can use grey water here if you want to.



One of three 50-gallon rain barrels in my yard, painted to match my house, with a cushion spurge (*Euphorbia polychroma*) ready to grow up to hide it.

Xeriscaping: What Is It and Is It For You? ... *continued*

6. Mulch

Mulch conserves soil moisture, keeps soil cool, and suppresses some weeds. Xeriscapes never have bare soil. Choose the kind of mulch that creates the look you want. I like the look of shredded bark and it decomposes to add a little organic matter to the soil. You can use gravel or many other things (including recycled materials) that look good to you and protect the soil.

7. Maintenance

Maintenance for xeriscapes is the same as for other gardens: weeding, top dressing soil with compost, pest control, pruning and shaping, and fall clean up. Weeding is especially important because weeds compete with desirable plants for water and nutrients, and weeds grow rapidly so they can easily overwhelm xeriscapes.

How to Get Started

A painless first step is to reduce lawn areas by making existing planting beds larger. You can dig up the turf or you can smother it with several layers of newspaper or cardboard covered with compost and mulch; just dig planting holes through the layers.

You don't have to give up your favorite shrubs and perennials even if they are not dry-adapted. Group plants that have high water needs, make sure the soil is well-amended with compost, mulch well, and commit to supplemental watering with a watering can or a couple of extra drip emitters.

I learned this the hard way: when adding new plants, choose small ones and plant them early in the season, when the soil is still relatively moist and cool. The plants will experience less transplant shock and need less supplemental water to get established. I bought a dozen gallon-size rudbeckias, echinaceas, and stella d'oro day lilies on sale in July, because they were big and cheap. They were also very pot bound and by



Seedling in loose soil



Root-bound plant

the time I loosened the root balls and got them in the hot, dry ground they really struggled. I had to water them daily from my rain barrels until September.

In summary, xeriscaping does not mean doing without water altogether, and it does not mean being limited to cactus and stone. It does mean using water wisely and choosing plants that are well-adapted to local conditions of rainfall, soil, wind, and temperature.

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On the next page is a list of dry adapted plants I have grown in Helena.

Xeriscaping: What Is It and Is It For You? ... *continued*

Dry-Adapted Plants for the Helena Area

<i>Alcea rosea</i> (hollyhock)	<i>Pulsatilla patens</i> (Pasqueflower)
<i>Achillea</i> (yarrow)	<i>Perovskia</i> spp. (Russian sage)
<i>Ajuga reptans</i> (carpet bugle)	<i>Phlox subulata</i> (Creeping phlox)
<i>Arabis</i> spp. (rock cress)	<i>Rosa</i> Harrison's yellow
<i>Coreopsis</i> spp.	<i>Rudbeckia</i> spp.
<i>Echinacea</i> spp.	<i>Salvia</i> cultivar 'East Friesland Sage'
<i>Tanacetum parthenium</i> (feverfew)	<i>Sedum</i> spp.
<i>Geranium</i> x 'Johnson's Blue' (cranesbill)	<i>Sempervivum</i> spp.
<i>Hemerocallis</i> spp. (day lily)	<i>Thymus</i> spp.
<i>Iris germanica</i> (bearded iris)	<i>Syringia</i> spp. (Lilac)
<i>Linum lewisii</i> (a native North American flax, very hardy, reseeds readily)	



Annual bachelor's buttons (*Centaurea cyanus*) reseeds vigorously and biennial mullein (*Verbascum thapsus*) reseeds so rampantly I rip it up unless it is exactly the place I want it.

Event Schedule

Fruit Tree Grafting Workshop

Saturday, April 5, 2014
Lewis & Clark County Fairgrounds
100 W. Custer, Helena MT
447-8346

Spring Private Applicator Training

Friday, April 25, 2014
Extension Office in Helena
Lewis & Clark County Fairgrounds
100 W. Custer, Helena MT
447-8346

Spring Private Applicator Training

Friday, May 16, 2014
Lincoln Community Library
447-8346 for more information

Helena Community Gardens

Grow Local 2014

April 1 @ 5:30 pm - 8:00 pm St. Paul's Methodist Church,
512 Logan St., Helena, MT 59601
Annual potluck get-together to kick off the gardening season

Season Extension and Yield Prediction

April 15th @ 6:00 pm—7:30 pm
Lewis & Clark County Extension Office Conference Room

Bedding Plant and Seed Exchange

May 31 @ 1:00 pm - 3:00 pm
Selma Held Garden, Saddle Drive and Beltview, Helena

Sixth Ward Park Community Garden: Increasing Biodiversity
with Perennials and Polycultures
June 17 @ 6:00 pm - 8:00 pm
6th Ward Park

Plant Profile: Carrots: Old-Fashioned Superfood

Ann Prunuske



In early Celtic literature, the carrot is referred to as “honey underground.” What a perfect name for an easy-to-grow and extremely nutritious vegetable!

Botanically, carrots belong to the *Apiaceae* or umbelliferous family, are in the genus *Daucus* and are known scientifically as *Daucus carota*. The other close *Apiaceae* members include parsnips, parsley, dill and cumin. It is believed that the carrot, *Daucus carota* var. *sativus*, was cultivated some 5000 years ago in Middle Asia around Afghanistan, and slowly spread into the Mediterranean area. The first carrots were mainly purple, with some white or black - not orange.

Its roots were thin and turnip shaped. Temple drawings from Egypt in 2000 BC show a purple plant, which some Egyptologists believe to be a purple carrot. Images of the vegetable appear in tomb paintings in the Valleys of Luxor. Seeds and leaves were used medicinally by ancient Greeks and Syrians. The familiar orange carrot was bred and stabilized, possibly from a mutation, in the Netherlands in the seventeenth century.



Illustration in an ancient Egyptian tomb. Image from the World Carrot Museum.

TYPES OF CARROTS

Today, carrots are classified by their shapes. The type of soil in one’s garden may suggest one variety over another. Chantenay and Danvers carrots have blocky shapes that can handle heavy or shallow soil, while slender Nantes and Imperator carrots need deep, loose soil.

TYPE	DESCRIPTION	CULTURAL TIPS	VARIETIES
Nantes 55 to 70 days (spring) 60 to 75 days (fall)	Easy and widely adapted; straight, cylindrical roots 5 to 7 inches long; sweet flavor and crisp texture; limited storage potential.	Grow in loose, sandy soil or in raised beds enriched with plenty of organic matter, but no fresh manure.	‘Early Nantes’ ‘Nelson’ ‘Mokum’
Chantenay 55 to 70 days (spring) 70 to 110 days (fall)	Conical roots with broad shoulders and rounded tips; rich, sweet flavor and good storage potential.	Excellent type to grow from summer to fall, and not as picky about soil as other types. Usually sizes up well in clay soils with high organic matter content.	‘Red Core’ ‘Kuttiger’ ‘Kurota’
Miniature/Baby 50 to 60 days (spring) 60 to 70 days (fall)	Round, cylindrical or tapered roots less than 5 inches long; crisp texture and frequently quite sweet when mature; limited storage potential.	Grows in any fertile soil that drains well. Makes good “marker” plants to separate sowings of salad greens.	‘Thumbelina’ ‘Little Finger’ ‘Parmex’
Imperator 55 to 100 day (spring) 80 to 110 days (fall)	Long, tapered roots with stocky shoulders and strong tops; slightly fibrous texture. Stores well.	Roots size up best in deep, sandy loam. When pleased with their site, roots can become quite large.	‘Yellowstone’ ‘Purple Haze’ ‘Sugarsnax’
Danvers 70 to 80 days (spring) 80 to 110 days (fall)	Thick-rooted cylindrical shape, often with yellowish core; widely used in processing, good for juicing. Stores well.	Grow in raised beds or in deep, sandy loam. Good main crop type for cool climates.	‘Danvers’ ‘Healthmaster’ ‘Danvers Half Long’



Plant Profile: Carrots: Old-Fashioned Superfood ... continued

Additional varieties (in all colors) include: Scarlet Nantes, Dragon, Royal Chantenay, Solar Yellow, Lunar White, Cosmic Purple, Paris Market, and Atomic Red. Organic, heirloom or open-pollinated carrot seeds are easy to find. Sources include Baker Creek Heirloom Seed Co., Heirloom Seeds, Local Harvest, Sustainable Seed Co., Seed Savers Exchange, and West Coast Seeds.

NUTRITIONAL BENEFITS



Yellow Carrot and Red Carrot
Rembert Dodoens (1517-1585).
Image from the World Carrot Muse-

It is important to note that purple and red carrots have significant health benefits. A 2010 study by Lindsay Brown, a professor of Biomedical Studies at the University of Southern Queensland, AU, found purple carrots contained 28 times more anthocyanins than orange carrots (Munroe, 2010). Anthocyanins are the reason purple grapes, blueberries, purple plums, eggplant, purple cabbage and other purple fruit and vegetables are so good for us. They tend to reduce blood pressure, increase “good” cholesterol and are an anti-inflammatory. So, consider expanding your carrot color palate.

Sweet and succulent carrots are notably rich in anti-oxidants, vitamins and dietary fiber; however, they provide only 41 calories per 100 g, negligible amounts of fat and sodium, and no cholesterol. They are an exceptionally rich source of carotenes and vitamin-A.

Cooking carrots makes beta-carotenes more bio-available. Flavonoid compounds in carrots help protect from skin, lung and oral cavity cancers. The bulk of carrot nutrients are either in or just under the skin. Avoid peeling them if possible. Carrot greens are rich in vitamin K.

CULTIVATION

Carrots are a cool season crop and grow best at temperatures between 60 and 70F. A rich organic sandy loam is ideal. In a site with very poor rocky soil, consider raised beds. Carrots are heavy feeders, but excess manure applied during the growing season can cause forked roots. Apply manure in fall or make sure manure is thoroughly composted. Use fertilizer before you plant and side-dress when plants are 5-6 weeks old. Tomatoes welcome carrots as a good companion plant.

Sow thinly starting 3 weeks before the last frost date and every 2-3 weeks thereafter until about mid-July. When plants are 3” high, thin to 1 plant per inch. Use a scissors rather than trying to pull out the roots. Thin again 2 weeks later to 3” to 4” apart. Cover plants with an inch of mulch to preserve moisture and to prevent the carrot tops from becoming green and bitter.

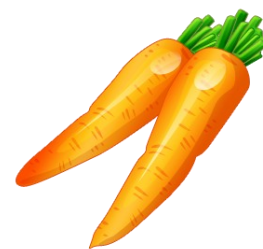
Carrots become tastier as they grow, though can be eaten as soon as they are big enough. Those destined for winter storage should be pulled just before the first frost of fall. Twist off the tops but do not wash. Store in a Styrofoam cooler layered in sand, a 50-50 mix of sand and wood shavings, straw, or sawdust. Optimum storage temperatures is 32-40F (I have had great success using an old Coleman cooler filled with clean, hardwood sawdust and stored in an unheated garage.).

Sources:

Special thanks to the World Carrot Museum, a virtual museum initiated and curated by [John Stolarczyk](http://www.carrotmuseum.co.uk/history5.html) of the UK. Its collection of facts, lore, and tips can be found at: <http://www.carrotmuseum.co.uk/history5.html>

Gough, R. & Moore-Gough, C. (2009). *Guide to Rocky Mountain vegetable gardening*. Brentwood, TN: Cool Spring Press.

Monro, K. (2010, August 8). Purple carrots the next superfood. *The Sidney Morning Herald*. Retrieved from <http://www.smh.com.au/national/purple-carrots-the-next-superfood-20100807-11phz.html>



Vertical Gardening – Growing Up!

Judy Halm

If you think that you can't garden because you live in a small, confined space, you may be pleasantly surprised to learn that there are many ways you can create both vegetable gardens and flower gardens in your space. Whether you live on a long, narrow lot with neighbors close, have only a small cement slab for your back yard, or live on the third floor of an apartment building with a tiny balcony, you can surround yourself with greenery. All you need is sunlight, vertical space and some ingenuity.

Growing vertically has several benefits: it takes up less ground space; it can hide unsightly fences or buildings; it can provide privacy from neighbors or busy streets; vegetables can be kept off the ground and so remain more clean and free of pests. Additionally, plants grown vertically can be more accessible for those who have difficulty bending or leaning over to tend them. There are downsides to growing vertically, also. Plants grown on tall structures such as fences, trellises or arbors will create shadows for lower-growing plants, so you will need to plan for shade-loving plants in those areas or a garden feature which ties in with the setting.



This photo from a display created by the North Carolina Extension Master Gardener program shows a number of possibilities for vertical gardening in a small space. The containers in this photo are designed for outdoor growing. The photo displays a **raised bed** with several planters for growing. You can also use planters or pots elevated on a small table, on cinder blocks, on top of a flat dog house or any other flat surface you can create. A visit to a second-hand store could yield plant supports in the form of clothing racks, metal shelving or old ladders.

Hanging planters can be suspended from the roof of a porch or balcony. Vegetables such as lettuce, basil, chives and arugula do well in hanging planters. Make sure they receive adequate sunlight and are in a location where you can water them easily.

<https://blogs.extension.org/mastergardener/2012/06/11/garden-up-displays-help-teach-vertical-gardening/>

backed pots can be attached to the lattice with wire. Several companies make gardening bags which are designed to be filled with soil and attached to fences or walls, and would work well with lattice attached to a wall. The gardening bags themselves can be attached to walls or fences, also. Check the Internet for sources of the gardening bags.

Window boxes can be attached to a fence or wall, hung from a balcony railing or set on a porch railing. You can also place window boxes on a metal shelving system or on a series of cinder block which raise the planters off the ground.

Old ladders can have planters located on the steps; you may need to add a wider board to the steps to support the planters. If you are handy with tools, you can build your own plant ladder with plant "steps" on both sides. Check the ReStore for inexpensive boards and fasteners to build your ladder. Another vertical support can include **window box planters** on one side and a **lattice** on the other. Plant greens and herbs in the planters while the lattice would be perfect for

If you have a wall or fence where you can attach a **lattice**, you can create a hanging garden. Flat-



Photo courtesy MSU Extension Service Gary Bachman
<http://www.urbanfarmonline.com/urban-farm-news/2010/12/07/vertical-gardening-for-accessibility.aspx>

Vertical Gardening – Growing Up! ... *continued*

climbing plants such as scarlet runner beans, cucumbers, squash and climbing peas and beans.

Lattice, trellis and wire can be attached to garage walls or high fences to provide a perfect place on which vining plants can grow. Decorative vines work well here, and can provide privacy and shade if needed. Climbing vegetables such as cucumbers, squash, peas and beans can provide tasty greenery throughout the summer and fall.

A **hanging shoe organizer** attached to a fence, wall or suspended from the eaves on a rod can provide a unique planter for vegetables or flowers. Make small drainage holds in the bottom of each shoe compartment, then fill the compartments with growing medium and compost. You can transplant lettuce or herbs into the chambers, or fill them with an assortment of flowers. If you hang this planter on a wall, be sure to provide protection from moisture between the wall and the planter. A plastic tarp or large piece of plywood works well for this purpose. Placing a planter below the shoe garden to catch the water drips will help prevent muddy spots on the ground.

If you collect **plastic soda or drink bottles** for recycling, consider putting them to use as a vertical garden before you take them to recycle. Two-liter size bottles work best for this purpose. The bottles can be attached to boards, suspended from fences, walls or eaves by wires as in the photo below.



Plants grown in a shoe organizer

<http://www.instructables.com/id/VERTICAL-VEGETABLES-quotGrow-upquot-in-a-smal/>



Photo: thisiscolossal.com. Recycled bottles filled with soil and herbs provide a functional herb garden at a family home in Sao Paulo. Designed by [Rosenbaum](#)

Rain gutters on your house are not supposed to grow plants, but rain gutters can be a great way to “grow up” the side of a wall or fence. Shallow-rooted plants such as lettuce and some annual flowers are well-suited to growing in rain gutters. If you get recycled rain gutters, check to make sure they are made of non-toxic materials if you plan to plant edibles in them. Also re-

member to drill drainage holes in the bottom of the gutters to remove excess water. Because rain gutters are relatively shallow, they may dry out quickly. Add a good mulch to the gutters, and be sure to water them frequently.

For more information about vertical gardening, type “vertical gardening” into your favorite search engine and you will find many useful tips and hints. Type in “images of vertical gardening” for some great photos of growing up!



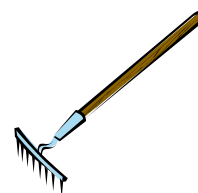
Penn State University Extension Service Lehi Valley Master Gardeners
http://blogs.mcall.com/master_gardeners/2013/02/

Gardening Calendar - Connie Geiger

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.

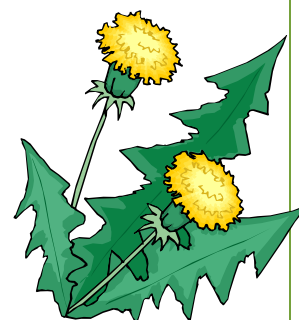
March ←

- ♣ Clean, sharpen, and oil garden tools; sand and repaint handles Tune up and repair lawn mowers, garden tractors, and rototillers. Review lawn service contracts and make changes.
- ♣ Prune deciduous trees and shrubs (see pruning article and chart from January 2012 Growing Zone Newsletter at <http://www.co.lewis-clark.mt.us/index.php?id=75>)
- ♣ Apply dormant oils where needed (see article in this edition of the Newsletter).
- ♣ Prune and fertilize gooseberries and currants.
- ♣ Take hardwood cuttings of deciduous ornamental shrubs and trees, and of healthy scion wood for grafting fruit and nut trees. Wrap in damp cloth or peat moss and place in plastic bag. Store in cool place.
- ♣ Set up an area for starting your garden seedlings – good light and heat source etc.
- ♣ Cut back dead rose canes, ornamental grasses, and any remaining perennials in flower beds.
- ♣ Rake remaining leaves from the lawn, to prevent suffocation.
- ♣ Set up a cold frame or hoop house for early start on greens, onions, and radishes.
- ♣ Once spring blooming shrubs (forsythia, pussy willow, and crabapple) form tiny buds you can cut them to bring indoors and put in water, to force them to bloom.
- ♣ Plant indoors or in greenhouse, eggplant, tomatoes and peppers.
- ♣ Check with local nursery and garden stores for seeds and early planting options.
- ♣ When soil is dry enough to work, prepare it for spring planting. Incorporate generous amounts of organic materials and other amendments, using the results of a soil analysis as a guide.
- ♣ Cover patches of garden with black plastic to warm the soil for early plantings.
- ♣ Scratch lawn surfaces impacted by snow mold; seed bare and damaged spots; aerate, fertilize, and possibly thatch the lawn.
- ♣ Use a soil thermometer to help you know when to plant vegetables. Some cool season crops like onions, kale, chard, lettuce, radishes, and spinach can be planted when the soil is consistently at or above 40°F.



April ←

- ♣ Help prevent damping off of indoor seedlings by providing adequate ventilation.
- ♣ Prepare raised beds in areas where cold soils and poor drainage are a continuing problem. Incorporate generous amounts (at least 2") of organic materials.
- ♣ Place compost or well decomposed manure around asparagus and rhubarb.
- ♣ Fertilize evergreens.
- ♣ Clean up overwintering plants such as geraniums, begonias, coleus - cut off all leggy growth, trim back to a few buds, repot if needed.
- ♣ Pull weeds; remove old growth and debris from garden beds.
- ♣ On warm days start turning the compost pile to get it “working “again.
- ♣ Direct seed sweet peas, snap peas, snap dragons, pansies, and violas,
- ♣ Start cucumbers, squash, and pumpkin, indoors for transplant.
- ♣ Spot spray lawn with broadleaf herbicide, but be careful to keep drift away from garden plants and trees, or dig out broadleaf weeds with hand tools while ground is soft and moist.
- ♣ Prune and repot house plants.
- ♣ Keep Easter lilies in a bright, cool location out of direct sunlight. Water as soil begins to dry.



May ←

- ♣ Harden off over-wintered flowers for transfer outside.
- ♣ Plant half-hardy vegetable seeds (2 weeks before last frost) - broccoli, Brussels sprout, cauliflower, and celery from transplants; potatoes from seed-pieces; and parsley.

Gardening Calendar - Connie Geiger ... *continued*

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.

- ♣ Plant 2nd planting of greens, radishes, and kale.
- ♣ Start hardening off transplants/seedlings – exposing them to outside temperatures during the day.
- ♣ Direct seed beans, seed potatoes and annual flowers.
- ♣ Remove mulches from around perennials and strawberries.
- ♣ Helena's average last frost: May 18th (give or take 2 weeks)
- ♣ Plant corn and transplants of tomatoes, eggplant, peppers, squash, cucumbers, melons, and annuals.
- ♣ Start checking for insects such as aphids, slugs, flea beetles, and cutworms.
- ♣ Install rain barrels under gutter down spouts.

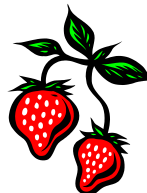


- ♣ Power rake, aerate and fertilize lawns.
- ♣ Prune spring flowering shrubs after flowers fade.
- ♣ Apply compost or fertilizer to annual flower beds before planting flowers.
- ♣ Pinch chrysanthemums and annual flower plants to keep them compact and well-branched.
- ♣ Remove blossoms from newly set strawberry plants to allow better runner formation.
- ♣ Apply compost and fertilizer to bulbs and perennials.

June



- ♣ Spot treat lawn for broadleaf weeds, or remove by hand.
- ♣ Water and fertilize container plantings regularly to encourage growth and flowering.
- ♣ Check soils for moisture content – if dry 2-to-3-inches down, water.
- ♣ Apply foliar fertilizers in the cool of the mornings.
- ♣ Install or hook up drip irrigation systems.
- ♣ Plant perennials with a water soluble root booster to help get them established.
- ♣ Plant perennial shrubs and trees now before the heat of summer hits.
- ♣ Renovate June-bearing strawberry plants after harvest drops off.
- ♣ Fertilize newly planted raspberries.
- ♣ Fertilize roses after first blooms; pinch spent flowers.
- ♣ Pinch back herbs to encourage more growth.



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>

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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: When should I water my yard and boulevard trees?

A: Worrying about watering trees when they are dormant in the fall and winter may seem a little peculiar, but this can be a critical time of the year for tree survival, especially in areas that experience little snow cover and are windy. Sound familiar? Supplemental watering in the fall and winter may be the difference between having healthy trees in the spring or replacing trees in the spring.

During the growing season, large amounts of water are lost through the tree's leaves through transpiration. In general, a mature tree can lose up to 238 gallons of water per day. During the winter months, photosynthetic processes are slowed, but evergreens continue to lose water through their needles and to a lesser extent the bark, buds and stems, more so than deciduous trees. If trees, especially evergreens, do not have sufficient moisture in the top 18 inches of soil, they may be prone to winter desiccation. The needles on the tips of the branches of your pine trees and blue spruces turning brown in the spring and early summer can be a sign of winter desiccation. Basically the tree is losing more water than what is available in the soil, thus the newest growth located at the tips of the branches dies.

How can you prevent winter desiccation? Water trees around the drip line thoroughly in the fall before the ground freezes. Ideally you want to go into winter with there being plenty of water reserves in the top 18 inches of soil. This is best accomplished with a sprinkler, garden hose or drip irrigation. You want slow and long irrigation periods. If you have a dry fall and winter, and whenever you have a day where the air temperature is 40° F or more, water your trees. The lawn sprinklers do not provide sufficient water for trees. Most sprinkler systems run for short durations several times throughout the week, which is opposite of what our trees need. The turf grass out-competes the tree roots for this type of watering. Another option to consider in very drought and wind stricken locations is to use an anti-transpirant. Anti-transpirant products such as Wilt-Pruf can be sprayed on a dormant tree typically in November or December. The product coats the tree and slows down winter water loss.

What about deep watering of trees, and those deep watering devices? The majority of tree species have 75 to 80 percent of their roots located in the soil depth of 6 to 20 inches, so if you are doing deep watering make sure you aren't missing the roots. If you are watering at 2 feet down in the soil profile, you will be building the water reserves at 2 feet and below, but you will be missing lots of roots above.

The March wind roars
Like a lion in the sky,
And makes us shiver
As he passes by.
When winds are soft,
And the days are warm and clear,
Just like a gentle lamb,
Then spring is here.
- Author Unknown

A cauliflower is a cabbage
with a college education.
Mark Twain



My green thumb came only as a result
of the mistakes I made while learning
to see things from the plant's point of
view.

H. Fred Ale



Dormant Oils

Connie Geiger

About this time of year when I was a youngster in Ohio I remember my dad talking about preparing to spray his apple trees with dormant oil. I never understood what he was talking about. I couldn't figure out why he would want to spray trees when they didn't even have leaves or flowers on them and when there wasn't a bug to be found, since it still felt like winter to me. Of course I never bothered to ask. Now that I've seasoned a bit and recently helped a friend prepare ground for an apple orchard, I wanted to know more about it. After doing a bit of research I thought I'd share what I learned.

Dormant oil sprays have been used for many years as an insecticide on fruit trees, as well as on some other trees and woody ornaments. Traditionally the oils used are highly refined petroleum products, mixed with an emulsifier so they mix with water. As its name implies, dormant oil is intended to be used while trees are dormant, or more specifically just as the trees are coming out of dormancy. It is primarily used to suppress scale, aphids and mites on fruit trees – including apple, pear, plum and crabapple. It's one of the least toxic insecticides for humans, pets, and for beneficial insects. Dormant oils kill insects by suffocation, coating them with oil that blocks the air holes (pores or spiracles) they use to breathe, and also can kill insect eggs that have wintered over in the cracks and crevices of bark on trees. So insects must be present and fairly inactive at the time you spray in order for the application to be effective. Dormant oils are not effective against some of the more common insect pests in Montana like apple maggot, cabbage worms, codling moth, or caterpillars.



Advantages of Dormant Oil

It is relatively safe for humans, birds, mammals, and most beneficial insects. Since it kills by a “mechanical” process, insects are not likely to develop a resistance. Since they are applied so early in the season, and dissipate quickly, the product is likely no longer present at the time fruit would be harvested for consumption.

Disadvantages of Dormant Oil

Timing is everything. If not applied at the right time, and at the correct temperature range, the oil is not effective and/or may damage new growth. The insects, or in some cases their eggs, have to be present for the oil to kill them. If the insects arrive after application there is no effect. Dormant oils do not impact some of our more common insect pests that are active later in the growing season.

Application

Dormant oils can be purchased at local garden centers. Dormant oils should be applied just BEFORE new growth starts in the spring, or before bud break. If used too soon the insects are not actively “breathing”. If sprayed too soon the oils darken the bark and buds, speeding up bud development, putting them at risk of freezing. If used after the buds open the leaves and flowers can be damaged – killing young leaves, or causing their edges to turn black. Apply when temperatures are cool but above freezing for at least 24 hours. Check the weather forecast as it is best to avoid severe freezing for 3-4 days after application.

The insects you want to target with dormant oils usually winter over in the crevices and cracks of tree bark, in the joints of limbs, and in and around buds, so be particularly thorough in spraying those areas. Shake the sprayer frequently to ensure consistent dilution of the oil solution. If you are having issues with spruce spider mite, dormant oil can be helpful. However, it can remove the blue coloring of blue spruce, and can stain some surfaces, like dark colored house paints.

Always read the label of any of these products before use, to determine what plants you can safely use them on, which pests they will impact and at what stage of their growth, what season to use them, or what temperatures they are most effective, and what concentrations to use.

Other Sprays and Horticultural Oils

Dormant oils are specific for use when trees are still dormant, because the oil used in them can damage tender leaves and flowering buds. However, in recent years other types of oil products and sprays have been developed that are less harsh and can be used during the growing season to control pests on plants. They are generically referred to as horticultural oils, or sometimes as ultrafine or summer oils. Some of these products can even help control aphids, leafhoppers, whiteflies, scale and spider mites, when they are more active and plentiful during the summer.

Dormant Oils ... *continued*

Another type of dormant spray is liquid lime-sulfur which is a fungicide, rather than an insecticide. It is primarily used for smaller fruit shrubs and vines such as grapes, blueberries, gooseberries, raspberries, and blackberries, and it should never be used with an oil spray. There are some "natural" oils that have been used as insecticides, like cottonseed oil, neem, and even soybean oil.

If you have questions about dormant or horticultural oils and their uses, contact your local Extension Agent.

Recipe of the Month: Kale Chips

Maureen Kiely

Kale – the wonder veggie! It's packed with nutrients and so easy to grow in Helena's climate. Each year, I just stick some seeds in the ground, water regularly, and I have an abundance of kale from late spring through the first frost. (Instead of pulling up an entire bunch, I just harvest the outside leaves on the kale plant as I need them. That way, the kale continues to produce new leaves the entire growing season.)

The challenge with kale is figuring out how to cook it. Not everyone likes the slightly bitter flavor. A quick, easy, tasty way to cook kale is to make kale chips. Here is a recipe that I've used for the past two years. It's quick, easy, healthy, and everyone I've served the chips to has liked them. (credit: recipe taken from the Food Network website)

Ingredients:

1 bunch kale, washed and well dried
1 tablespoon olive oil
salt and pepper (preferably freshly ground)
1 teaspoon brown sugar

Directions:

Preheat oven to 300 degrees F

Cut the center ribs off the kale and tear the leaves into large pieces. Place leaves in a large bowl. Drizzle with the olive oil and toss until evenly coated.

(My note: I find it works best to mix the kale with my hands. Add the oil and then mix, mix, mix until you can see that each leaf has a light coating of oil.)

Place kale on 2 baking sheets. Arrange in a single layer (don't overlap leaves; and I use non-stick baking sheets). Sprinkle with salt and pepper to taste. Place in oven and bake for 20 – 25 minutes, or until crisp.

Remove from oven and sprinkle with brown sugar.

(My note: As the kale chips cook, they start to resemble shriveled bits of dried seaweed. That is the way they are supposed to look. I suggest checking on them after 20 minutes. If the leaves are browning, pull them out of the oven and lightly shove one of the leaves. If it is crisp like a potato chip, then the batch is done.)

And that's all there is to it! About five minutes of prep, and 20 – 25 minutes of cooking. The chips are crispy and have a nice mix of flavors – salty, sweet, bitter, peppery. I think the brown sugar is nice, because it helps to balance the strong flavor of the kale. Enjoy!



"Science has never drummed up quite as effective a tranquilizing agent as a sunny spring day."

- W. Earl Hall

