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CHOOSING CLIMATE ADAPTED PLANTS—USDA HARDINESS MAP REVISED

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Nevada County
Master Gardener

Forget those blankets, plastic sheets, and pine-bough teepees. Learn to love where you live. Choose plants to fit the climate. You will be rewarded with a healthy, beautiful landscape.

References are found in magazines and catalogs about the US Department of Agriculture (USDA) Plant Hardiness Zone map.

Using the USDA Hardiness Zone Map

The USDA Hardiness zone map gives the lowest average temperature. Agricultural and ornamental plants have been tested for the lowest temperature at which they will **thrive**.

The USDA has revised the cold hardiness map to reflect the warming climate. If you live in the central part of the US, temperatures are uniform. In California, especially the foothills, the ridges, canyons and valleys create microclimates.

The USDA Hardiness Zone Map shows zones by US Post Office Zip Codes. The new USDA cold hardiness map shows that all of western Nevada County falls in cold hardiness zone 9a with lows between 20-25 degrees F. In western Placer County, Gold Run and Colfax are in zone 9a 20-25 degrees F. As the elevation drops to Applegate the remainder of western Placer County falls in hardiness zone 9b 25-30 degrees F.

In the Nevada County zip code zones 95946 and 95959, the elevation ranges from below 2,000 feet to 4,000 feet.

Use the new hardiness zone map as a starting place. Before you buy a plant, or lift a spade, learn everything about your site. Placer and Nevada Counties have many microclimates. Are you in a “banana belt,” or frostbite falls?” Over more than one year, keep temperature records of the lowest lows and the first and last frost date. Select plants suitable for your microclimates.

Microclimates

Compass direction and elevation create microclimates. A north-facing site is colder than a south and west-facing site. Cold air is like water. It runs down hill and puddles at the foot.

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A site near the top of a ridge is warmer than one at the bottom. The elevation change over a short geographic distance will make the difference between frost or frost-free.

How plants survive the cold

Shorter day lengths trigger plant hormones to begin the process for the survival of winter cold.



Carbohydrates are stored in winter for use in the next growing season. When temperatures drop in the fall and winter, less water is held in the tissues. Hardy plants have a higher level of soluble carbohydrates, much like antifreeze. Mature tissue with brown coloration is the most hardy. Young plants are less able to withstand cold.

Fluctuating temperatures in fall, winter, and spring can result in plant injury. In some species, hardiness can be lost after several days of warm temperatures.

At 50 to 60 degrees F, carbohydrates and water begin to move towards buds and shoots. Late winter and spring frosts then can cause injury in these non-hardened tissues.

Many flowering shrubs and fruit trees have chill hour requirements. Low-chill fruit varieties will bloom in the false spring of February, only to have the blossoms or immature fruit killed by late spring frosts. Once a plant has had enough chill-hours, warmth will trigger bloom.

Choose varieties that have chill hours that match your climate zone. Nursery personnel, Master Gardeners and on-line references will help you make the best choice.

Recognizing cold injury

Damaged tissue usually browns after it thaws. Look for damage first to flowers and shoots, then in canes, stems and branches. Often plants may seem to have escaped frost damage. Then, in early summer, the plant's damaged vascular tissue cannot support transpiration (the movement of moisture to the leaves) and the plant dies in summer from **cold injury**.

Diseases and injuries from cold temperatures

Cold may cause cracking in the bark of plants. This damage can happen in the coldest weather or after experiencing false spring temperatures in late winter.

Damage occurs most frequently in plants that are not adapted to the area. This is true for plants from colder or warmer regions.

Cracks in bark allow disease organisms to enter and infect. Roses and many other ornamentals may develop bacterial canker if disease enters frost cracks.

Thin bark on trees such as maples and on young trees can be warmed enough by bright sunlight to become active and begin the flow of food from the roots. This is especially true if the tree is receiving reflected light.

Bark injury occurs when a sharp nighttime temperature follows warm daytime temperatures. The bark

dies on the exposed side from sunscald.

Reducing cold damage

- Paint thin-bark trees with 50% interior latex and water.
- Avoid applying high nitrogen fertilizers in late summer and fall. Nitrogen promotes succulent growth that is prone to freeze damage.
- Pruning stimulates growth & should not be done after late summer.
- Cold damaged plants should not be pruned until new growth appears.
- Keep soil moist to increase heat retention and prevent freezing plant roots.
- Pull organic mulches away from plants in winter. Bare soil absorbs heat during the day and re-radiates it at night, reducing frost injury. Soil covered with mulch does not absorb as much heat and radiates less. Clear plastic, not black, increases soil heating.

Plant the right plant in the right place-you will be rewarded with healthy, vigorous growth.

References:

How Perennial Fruit Plants Get Through the Winter. 2000. J. Clark. *Kitchen Gardener* #24

Passive Frost Protection of Trees & Vines. 1992. R.L. Snyder, K PawTaw U. UCCE.

Roses: Diseases and Abiotic Disorders. 2001. J Karlik & M.L. Flint. UCANR Publication 7463

ASK A MASTER GARDENER: WHAT DOES "F1 HYBRID" MEAN?

Trish Grenfell
Placer County
Master Gardener

Question: Recently, while shopping at the nursery, I noticed an "F1" after the name of a vegetable start I was going to buy. What does it mean?

Answer: "F1 hybrid" is the term used for the first generation hybrid seed/plant that occurs following the successful cross-pollination of one genetically uniform plant variety with another specific genetically uniform variety.

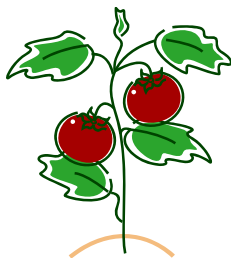
And there you have it...but let's investigate in a little more detail...

Producing healthy F1 hybrids requires the use of parent plants that descend from pure lines which consistently self-pollinate to produce one or more desired traits.

Creating pure lines for an F1 hybrid can take as much as 7 or 8 years! After horticulturists establish two pure lines and cross-pollinate them, the female plants will bear F1 hybrid seeds/plants.

The reason horticulturalists go to all this trouble is to produce hybrid seed/plants that will have benefits for gardeners. Generally speaking, these plants exhibit "hybrid vigor".

They may have higher seedling survival rates, may develop earlier flowers, produce higher yields, exhibit resistance to disease and insects, and display more uniform appearance.



In a sense, it would seem like these hybrids are the way to go for most home gardeners. Most gardeners would love to utilize hybrids that resist disease for example. But, before we go all in with hybrids, let's take a look at some of the issues with hybrid seed/plants.

The primary disadvantage of hybrids is that they do not breed true to type.

The hybrid plants may be sterile or if they produce seeds, the seeds will not produce the same plant the following year because they contain an unpredictable mixture of characteristics from the grandparent plants instead of being similar to the parent. They usually lack hybrid vigor due to a lesser degree of genetic diversity. Therefore, hybrid seeds (or plants) must be purchased year after year.

And that may not be the only extra expense of using hybrids. The breeder of the F1 hybrid variety is the exclusive source of that variety because only that breeder knows the two "purified" parent plants used to produce the seed.

Furthermore, the pollination is often done by hand which drives up the cost of the seed. Other breeders can try to duplicate, but only the first breeder knows the exact combination used.

Often the breeders trademark/patent their F1 hybrids so the retailer must pay a royalty to sell the plant under the registered trademark name. This further increases the cost of the F1 seeds.

Another perceived disadvantage: some gardeners feel the taste of hybrid vegetables simply does not equal that of heirloom varieties. But, of course, taste is very subjective.

'Burpee's Big Boy,' 'Celebrity,' and 'Early Girl' tomatoes, 'Sweet Success' cucumber, and 'Premium Crop' broccoli are examples of F1 hybrids that have been popular for years. Many gardeners rave about the taste and ease of growing these varieties.

As popular as some hybrid varieties are, heirloom (or open pollinated) varieties have also become quite popular (or remained popular in many cases). Many of these varieties have been grown for a very long time and have loyal followers.

The advantage of heirloom (open pollinated) seeds is that the home gardener from year to year and generation to generation may continue heirloom plants by careful seed saving. And, an often overlooked benefit of open pollinated seeds, is that they provide a larger gene pool for future breeding.

Well known open pollinated varieties include 'Kentucky Wonder' pole bean, 'Scarlet Nantes' carrot, 'Black Beauty' eggplant, 'Black Seeded Simpson' lettuce, 'California Wonder' pepper, and 'Brandywine' and 'Roma' tomatoes.



BULLETIN BOARD

Sierra College Community Education

Classes for 2012 are now posted

www.sccommed.org

WaterWise Gardening

Waterfall and Water Features

Art of Bonsai

Organic Vegetable Gardening

And more!!

Placer Nature Center
Workshops with Master Gardeners

April 7th, Gardening in Deer Country,
11am to 1pm

May 12th, Q&A: Vegetable and
Landscape Gardening, 11am to 2pm

June 9th, Gardening w/ Kids, 11am to
2pm

www.placernaturecenter.org

Visit the Master Gardeners at the Farmer's Market!

Placer County MGs—Auburn Farmers
Market from 8am to Noon—May 5, 19

Nevada County MGs—Growers Market at
North Star House—8am to Noon—June
through September

Auburn Spring Home Show

The Auburn Spring Home Show takes place
May 18, 19, and 20th at the Auburn Fairgrounds.

Friday: 11am-6pm
Saturday: 10am-6pm
Sunday: 10am-6pm

Come visit the Placer County Master Gardeners at their booth!

NATURAL HERBICIDES: ARE THEY EFFECTIVE?

Cheryl Wilen
UC IPM South Coast
Area Advisor

The public's increasing demand for safe "green" products has resulted in many new environmentally friendly herbicides for controlling weeds in the garden and landscape.

Information on the efficacy of these new products is limited. However, environmental awareness groups and public agencies are promoting them as a way to reduce the use of herbicides that have a greater potential to contaminate surface waters.

Retailers are beginning to more widely stock these "natural" herbicides, most of which contain essential oils or other natural plant extracts targeting weeds.

How They Work

The majority of these "green" weed-control products are botanically based oils (e.g., clove oil, eugenol, and *d*-limonene), soaps (e.g., pelargonic acid), or acetic acid that control weeds by destroying the leaf cuticle or causing cell leakage that rapidly leads to death.

Unfortunately, because these herbicides kill only green parts of the plant they contact, they don't provide long-term control of weeds with extensive root systems or underground storage structures such as rhizomes, tubers, or bulbs. Thus many treated plants are able to recover.

In contrast, some conventional herbicides such as glyphosate or 2,4-D are translocated to roots or underground storage structures to

kill larger plants and perennial weeds.

Application

These types of herbicides are applied after the weeds have emerged (postemergent) and have little or no soil residual activity. They don't control weed seedlings that germinate after application.

They kill the plants by breaking down plant membranes and are considered contact or burndown herbicides. These herbicides are very fast acting, but to be most effective they must contact all or most of the aboveground plant tissue.

It is especially important to spray the growing points, or else the plant will re-grow. Grasses and perennial weeds are difficult to control for an extended period of time, because they have some or all of their growing points below ground.



However, in some cases, especially where annual weeds are small, these products may be appropriate. These herbicides are best used on small weeds and annual weeds or for controlling weeds in cracks and, in some cases, edging.

They can be used for spot spraying, but care must be taken that the spray or drift doesn't contact desirable plants or else leaf spotting or death will occur.

Increasing the Odds

Ways to improve efficacy when using these types of herbicides include:

- Good spray coverage;
- Application in warm weather (75° to 80°F);
- If using concentrates, addition of surfactants that improve weed control;
- Treatment when weeds are small; and
- Repeat applications for larger weeds, in most instances.

So the question is: Are natural herbicides safe and effective? If used as part of an integrated pest management program, the contact herbicides fit very well.

Users should know that they won't get the same kind of long-term weed control as products containing glyphosate (e.g., Roundup). The user should also be aware that many of the plant based or "natural" products can cause skin irritation or eye or lung problems.

Eye protection and gloves as well as any other label requirements should be worn when using these natural herbicides, even if they are listed as exempt products. Note that some of the acetic acid products can be quite hazardous to handle.

ATTRACTING BUG-EATING BIRDS TO YOUR GARDEN

Mike Kluk
Nevada County
Master Gardener

A few resident birds can be a wonderful addition to your garden. Not only are they colorful and entertaining but, if you attract the right species, they can do a bang-up job ridding your garden of unwanted insect pests.

As luck would have it, the same simple birdhouse can serve as lodging for our best insect-eating birds including Western Bluebirds, Tree Swallows, Ash-throated Flycatchers, and House and Bewicks Wrens.

Historically, these birds nested in cavities in trees. As people cut down more and more of the older trees, these natural homes became sparse. It is hard to raise a family without adequate housing and their numbers declined.

By putting up a few birdhouses, you can help to stabilize the populations of these fellow travelers and enjoy the benefit of their company.

A benefit of the simple design below is that it can be built from a single 1 x 6 board, six feet long. A 1 x 8 board will work as well, leaving a bit roomier house. You can purchase a redwood or cedar fence board cheaply. But utilizing a salvaged board will give you a "pre-weathered" house, fitting in with other elements already in your garden. If you don't have something suitable lying around, call a fence contractor. Most are happy to let you come by and grab some boards when they are tearing out an old redwood fence. Most of the boards are quite sound; only the posts have rotted. (In addition to a few birdhouses, this will give

you free raw materials with which to build cold frames and raised beds, and to line pathways.)

Building the House

- **Tools-** Either a crosscut hand saw, circular saw or table saw, electric drill, 1/16th and 1/4 inch drill bits, 1 1/2 inch spade drill bit, drill bit for driving Phillips head screws.
- **Materials-** one 1 x 6 or 1 x 8 board, six feet long, about 20 galvanized 1 1/2 " size 8 phillips head wood screws, caulking.

Cut out each of the pieces as shown in the diagram below which is courtesy of the *US Geological Survey, Northern Prairie Wildlife Research Center*.

Placement and Maintenance

The house should be screwed to a tree or post using two inch screws with the entrance hole five to six feet above the ground. Attaching

the box to a metal pipe or piece of metal conduit will help to deter predators. In that case, you can use a couple of conduit straps to hook the box to the pole.

The box should face away from prevailing winds. It seems helpful to face it away from the afternoon sun or better yet, put it where it gets afternoon shade.

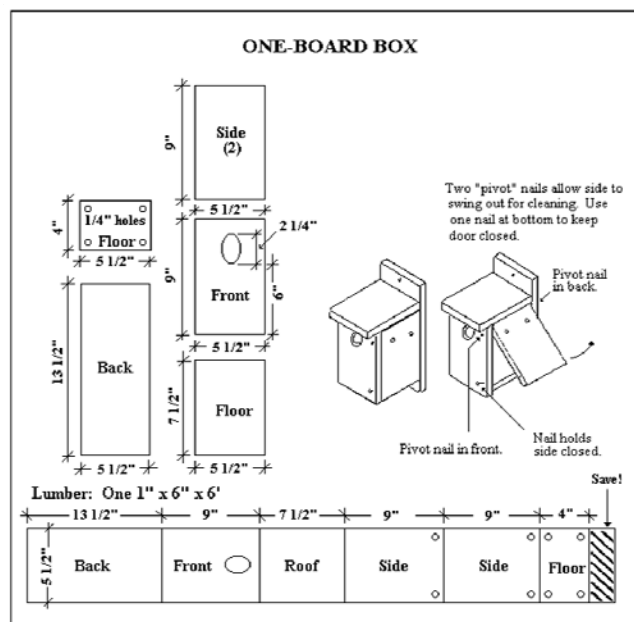
For Bluebirds, it is best placed in an open area since they like to sit on the box or a post to ambush bugs on the ground. Bluebirds, in particular, are very territorial so don't put two nest boxes near each other. It is also a good idea to face the nest box towards a tree or bush no more than 100 feet away so that the young birds will have only a short flight when they first leave the nest.

At the end of every breeding season, you should clean the box out. Simply remove the nesting material and scrape the box out if necessary. Dispose of the

contents somewhere away from the box site to prevent any resident parasites from reinfesting it.

Bluebirds will often have two or even three broods in a year so be sure to wait until the nest box is finally abandoned for the season.

That's about it for maintenance, pretty simple.





SPRING 2012 CALENDAR

APRIL



Saturday, April 7th from 10am-Noon at NC Master Gardener Garden (1036 W. Main, GV):
Composting Basics

Saturday, April 7th from 9am-11am at PC Master Gardener Garden (11477 E Ave. Auburn):
Starting a Vegetable Garden, Part 1

Saturday, April 14th from 10am-2pm at RUEC (1501 Pleasant Grove Blvd. Roseville):
Ask an Expert! Placer Master Gardeners will be there to answer your questions!

Saturday, April 14th from 10am-Noon at NC Master Gardener Garden (1036 W. Main, GV):
4-legged Pests: Preventing the Garden from Being a Salad Bar

Saturday, April 21st from 9am-11am at PC Master Gardener Garden (11477 E Ave. Auburn):
Starting a Vegetable Garden, Part 2

Saturday, April 21st from 10am-Noon at NC Master Gardener Garden (1036 W. Main, GV):
Waterwise Irrigation: Plant Needs and Plumbing

April 28th and 29th Home and Garden Show from 10am-4pm at Nevada County Fairgrounds:
Come visit the Nevada County Master Gardener booth!

MAY

Saturday, May 5th from 10am-11:30am at RUEC (1501 Pleasant Grove Blvd. Roseville):
Composting Basics (Vermiculture after from 1pm-2pm)

Saturday, May 12 from 10am-2pm at RUEC (1501 Pleasant Grove Blvd. Roseville):
Ask an Expert! Placer Master Gardeners will be there to answer your questions!

Saturday, May 12th from 9am-11am at PC Master Gardener Garden (11477 E Ave. Auburn):
Composting and Vermiculture

Saturday, May 12 from 9am-Noon at NC Master Gardener Garden (1036 W. Main, GV):
SPRING PLANT SALE: Come support our program and get your Veggie starts!

Sunday, May 13 from 10am-4pm at various garden locations in Placer County:
27th Annual Mothers Day Garden Tour

Saturday, May 19th from 9am-11am at PC Master Gardener Garden (11477 E Ave. Auburn):
Irrigation Workshop

Saturday, May 26th from 10am-Noon at NC Master Gardener Garden (1036 W. Main, GV):
Composting Basics

(See more activities on page 4 Bulletin Board)



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