



# Pinal County Cooperative Extension Garden & Landscape Newsletter March 2009



## SPRING CITRUS TASKS

When citrus trees begin to leaf out and flower buds start to appear, we know that spring is finally here.

I think we all can agree it has been a rough winter on citrus. The frosts of December and January have taken a toll on the leaves of many trees, sometimes leaving them with nothing more than bare branches, especially in the more exposed portions of the tree. I, myself, have seen many trees that have lost almost all of their leaves this year, mainly due to frost damage. Now is a good time to take stock of the trees and perform any maintenance tasks that need to be done, including any required corrective pruning.

I can hear it now. You people are saying with way too much enthusiasm, "Alright, he said we could go prune our citrus trees. Let's go get it done!" Stop! Before you go get your pruning equipment and start hacking away, let's think about this for a minute. We do not prune citrus in the same way that we prune peaches and apricots. If you do, you will harm the tree.

With deciduous trees, those that lose their leaves naturally during the winter, we do need to perform significant pruning when the leaves are off of the tree in order to maintain fruit quality and production. The same is not true for citrus. Citrus fruit quality and fruit numbers will remain quite constant, thank you, without any slicing and dicing. Yes, there are some pruning tasks that need to be done, but they will usually be only minor "tweaking", not major, wholesale surgery.

Let's talk not just about pruning, but all of the spring tasks for citrus.

First, we need to increase the frequency of our irrigations. With the warming weather and the initiation of fruit bud growth, the tree will need more water. Instead of flood irrigating our trees once a month, like we did in January or February, we now need to irrigate about once every two weeks. To be absolutely sure, dig down about six inches into the soil and feel the soil with your hand and fingers. If the soil is fairly moist and forms a good ball in your hand when you squeeze it, hold off on the irrigation. When the soil is still slightly moist but forms a weak ball in your hand, it is time to turn on the water.

If you didn't fertilize in February, let's get it done. Citrus needs to be fertilized at least three times a year. I think four is better, but so many leave during the summer, or hole up when the temperatures skyrocket, that it is easier to just focus on three.

If we choose to apply nitrogen fertilizers in three applications, it is best to make those applications in February, before growth begins, May, to help sustain fruit growth, and August to carry the fruit to maturity and to sustain the formation of next year's fruit buds. Some try to be more specific by tying their fertilization schedule to major holidays: President's Day, Memorial Day and Labor Day. I'll let you make the note on your calendar whichever is most convenient for you.

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## PROTECTING FRUIT TREE BLOSSOMS

Blossoms on fruit trees are key to a good harvest, but sometimes a tree loaded with flowers in the spring finishes the year with few, or no fruit hanging from its limbs. For tree owners craving a harvest of fresh, tasty fruit, this can be extremely frustrating.

The return of spring weather means that flowers will soon be appearing on fruit trees all over Pinal County. If conditions are right, many of those blossoms will set fruit and provide a good harvest at the end of the season. Unfortunately, there are times when some trees shed every one of their blossoms and provide no fruit in that year. The reasons for flower loss are complex and often confusing, but here are some tips that might help in the fight to avoid no-harvest seasons.

Frost is one of the more common reasons for fruit tree blossom loss, and good harvests often mean that the fruit grower has to be vigilant and timely with protection early in the season when cold temperatures are possible.

Fully opened blossoms on apricots, peaches, plums nectarines, pears, apples and citrus fruits will withstand some cold temperatures for a short period of time, but if air temperatures drop for several hours much below 32° F., flowers on fruiting trees will often be injured. Injured flowers usually means no fruit that year. Frost can also damage young fruit; cold-injured fruit will usually turn brown or black shortly after being injured by freezing temperatures and eventually drop from the tree.

Shortages of water and nutrients can also cause blossom drop. Blossom production places a heavy stress on the tree as it uses energy and nutrients to properly carry out its reproductive cycle. If there is a shortage of water and nutrients from the roots and sugars from photosynthesis within the plant tissues at the time that flowering occurs, many of the flowers may not be retained by the tree, resulting in many flowers but few, or even no fruit. Because of this, the timing of water and fertilizer applications is critical to fruit tree success.

The first nitrogen fertilizer application should occur between four to six weeks ahead of the bloom period to invigorate the tree before flowering.

Applying fertilizers at the time of flowering will help the tree later in the growing season, but the nutrients will arrive on location within the plant much too late to satisfy the nutritional demand of the flowers and the new developing fruit. The tree often responds to this problem by thinning itself. Other nitrogen applications should occur at mid-season to finish fruit development and in August to support the development of fruiting buds for next year.

A shortage of water, or even excessive water, can have a detrimental effect on flowers. It is important to maintain a good watering pattern during bloom, and for the period just after, to ensure that the tree is not stressed during the fruit setting and maturation process.

The best way to determine just how often a tree should be watered is to dig down about six inches into the soil with a shovel or hand trowel and look at the soil. Take a handful of soil from the bottom of the hole and squeeze it in your hand. If the soil feels cool and moist and if the ball of soil in your hand maintains its cohesiveness and shape, the soil probably contains sufficient moisture to carry the tree for a few more days. However, if the soil feels only slightly moist and the ball appears to be at the initial stages of collapse, it is time to water. Never let the soil at the six-inch level become completely dry.

Whether applying water to a tree from a drip system or from a hose into a well around the tree, it is important to deep water regularly to ensure that the entire root system is wetted and to flush out any salts that might be building up in the soil. When flood irrigating, turn the hose on to a slow trickle and let the water build up in the well slowly over time. The extended irrigation time will allow more water to enter the soil profile and move deeper into the soil. Deep irrigations store water throughout the root system and move harmful salts down and out of the rooting area.

For drip irrigation systems, ensure that there are sufficient emitters present to wet the entire area underneath the canopy of the tree. It is also important to make sure that the duration of irrigation is long enough to allow the water to move deeply into the soil. By filling the soil profile,

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## TIME TO PREPARE SPRING GARDENS

It's time to wake up your garden from its winter slumber and put seeds, or transplants, in the ground.

From about mid-March on, vegetable and flower gardens can be planted with reasonable confidence. Frosts and freezes should be pretty much over and the warming spring weather will help push plant growth quickly towards maturity. If you have been waiting for the right time, it's here.

We expect the average date of the last killing frost in Central Pinal County to be somewhere around the 6th of March. Of course, that date will vary with local conditions. It will also vary from year to year. On the few occasions where late winter and early spring storms drop temperatures below the freezing mark, young, susceptible plants can be covered with quilts, blankets or other cloth coverings for the few nights where damage might occur.

So, how do we start a vegetable or flower garden? In our Cooperative Extension pamphlet, "Ten Steps To A Successful Vegetable Garden", the process is clearly laid out. Let's work our way through the steps one by one.

First, choose an area that receives plenty of sunlight. Most annual flowers and vegetables, especially fruiting vegetables like tomatoes, squash and melons, do best with full sun exposure. Leafy and root vegetables will tolerate partial shade. Do not plant gardens under or near trees or large shrubs; their roots will rob fertility and water from the vegetable plants. Avoid planting vegetables in the narrow, shaded space between house walls and fences.

Second, make sure you have a loose, fertile, level, well-drained soil. If possible, avoid heavy clays and high sand soils. If caliche is present, it must be dug out and removed. Avoid areas that are crusted with alkali salts or infested with blueweed, Bermudagrass, nutsedge or other perennial weeds that can seriously crowd out desirable plants.

Third, ensure a successful garden by choosing good varieties. Select varieties that are known to do well in our area. Not all plants sold locally are

best adapted to local conditions. Most successful gardeners tend to stay with varieties that have proven their worth. However, it is a good idea to try one or two new varieties each year. This practice will not only provide an interesting change, but it will also spearhead a search for new varieties that perform well for you.

When experimenting with new varieties, it is often helpful to plant them next to your old favorites for easy comparison. I recommend that you keep a diary from year to year so that you will be able to remember how each variety performed.

If you are gardening by the square foot or in containers, select dwarf plants if possible. They will allow you to plant more in a smaller space. No matter what your garden size, throw in a few colorful flowers. They will add color and pizzaz to your garden. Seed catalogues can be a great help in finding new varieties.

Fourth, add organic matter regularly. Organic matter helps loosen our tight desert soils. Not only does it make the soil easier to work, but it also improves soil water-holding capacity, drainage and aeration. Manure, compost, peat moss and leaf mulch are common materials for this purpose. Composted manure is easy to use and is relatively free of weed seeds.

Apply a layer of organic matter two to three inches thick on the garden area about one to two months before planting, if possible. Work it into the top ten to twelve inches of soil. A thorough irrigation at this time helps leach harmful salts from the root zone.

Fifth, ensure the fertility of your soil. A fertilizer containing both nitrogen and phosphorus, when applied before planting, will benefit most garden crops. Although soils vary in fertility, a typical fertilizer application would consist of one to two pounds of 16-20-0 ammonium phosphate fertilizer on a ten by ten square foot area. Organic growers may choose to use blood meal or animal manures. If poultry manures are used, apply them at half the rate of other manures.

Be sure to spread all applications of fertilizer evenly across the entire garden area. Also, three

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## USEFUL WEED CONTROL TOOLS

With the abundant rains this spring, there are plenty of weeds everywhere. Let's take a look at a few ways, and a few tools, to help eliminate weeds from our property.

Weedy plants are aggressive, fast-growing species that crowd out desirable plants by stealing space, sunlight, water and nutrients. Unless these pests are controlled in a timely manner, they can seriously affect the growth and development of garden and landscape plants.

Mechanical weed control techniques have been around for as long as humans have encouraged the growth of useful plants. Removing weeds by pulling or hoeing is not always fun or easy, but, when the weeds get out of hand, sometimes pulling, hoeing or cutting are the only effective ways to solve the problem. Fortunately, there are a number of useful tools that can make mechanical weed control easier.

A small pocket knife, such as what might be carried in a pocket or purse, is just the right size to cut small weeds that grow from cracks and crevasses in concrete walks, driveways and tennis courts. A thin knife blade can easily be inserted deep into a crack to cut the weed below the crown, the spot where the stem and the taproot join. It is important to cut below the crown because many weedy plants have dormant buds in that area. If the crown is not removed, the plant will grow back again from those buds.

A small penknife is also useful to slice and lift small squares of turf from a lawn to check the roots for disease and insect damage. Once examined, the plug can be carefully replaced to resume growth.

Another useful tool is the linoleum knife. It has a stout blade with a hook on the end and a wooden or plastic handle that allows a good hand grip. The linoleum knife is excellent for removing weeds that are in close proximity to bedding or garden plants. A large hoe or shovel might be easier to use, but they are so unwieldy in tight places that it is almost impossible to get all of the weeds without doing damage to the desirable plants. A medium-sized, single-bladed knife can be worked in alongside plants to cut the roots of weeds without disturbing those plants that we wish to protect.

When working with these knives, it is important to wear heavy gloves because as the work speeds up and the off hand is used to hold the weed for cutting, sometimes the knife blade can get a little too close to fingers or hands. Good safety protection is important. Since working close to bedding plants often requires kneeling on the ground, a set of knee pads can be a good investment.

Another useful tool is a small, multi-tined cultivation fork. These tools resemble claws and usually have three to four tines attached to a handle. The value of these tools is twofold. First, they loosen and aerate the soil by breaking up surface crusts. Second, the movement of the tines through the soil damages or removes small weed seedlings. This tool generally is less successful for weed control when the weeds have more than two or three leaves.

The push-pull hoe is a tool that does its work, not with a chopping motion, but with a back and forth motion as it is pulled and pushed through the soil. The push-pull hoe slices through weed roots just below the surface of the soil and generally requires less force to operate than the standard chopping hoe. The push-hull hoe is a good tool to safely work around above ground drip lines because it slips along side and just underneath the drip tubing without danger of nicking or cutting the plastic tubes. Tools which require a chopping action are difficult to control. Lack of tool control generally leads to mistakes.

The narrow-bladed chopping hoe is a variation on a standard chopping hoe. While the larger hoe works well in wide open spaces, the narrow hoe is much easier to use where plants are placed close together. The narrow hoe will have a blade anywhere from one to two inches in width. However, even a narrow hoe seems magnetically attracted to plastic drip irrigation tubes.

Garden tillers can make quick work of small weeds in between rows of vegetables or flowers. A light weight tiller is best for this type of work because it is generally smaller and easier to control. In heavy soils, or in gardens where the spacing is larger, a heavy duty model may be a better choice. If possible, space the garden rows

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to five pounds of sulfur per one hundred square feet of garden will combat the natural alkalinity of the soil. These materials should be tilled or spaded into the top six to eight inches of soil shortly before planting.

Sixth, plan for correct irrigation. Irrigation is necessary for all garden crops in Arizona because of limited and uncertain rainfall. A good irrigation plan will add sufficient water to keep the soil moist, but not saturated. The entire root zone of the plant must be irrigated each and every time that water is applied through the growing season to leach out salts and provide for plant needs. Because excessive fluctuations of soil moisture adversely affect plant growth and quality, regular applications of water need to be made to prevent the soil from becoming too dry.

Seventh, plant at the right time. Early March is an ideal time to plant because we can still mature short season winter varieties and get a fast start on spring and early summer types. Beans, beets, carrots, eggplant, peppers, radishes, spinach, and sweet corn can all be planted up to March 15. Cucumbers, melons, squash and tomatoes can be planted through March. Generally, the earlier this latter group can be started, the more chance they have of putting out a crop before they are attacked by the heat and diseases of summer.

Eighth, watch for weeds. The soil abounds with the seeds of many plants. These seeds have accumulated over the years, the results of previous generations of weedy plants. They lay dormant in the soil waiting for just the right conditions for germination and growth. A vegetable or flower garden usually provides those conditions. Weeds must be removed to prevent the theft of valuable light, water and nutrients. Even small weeds can slow down the progress of new seedling vegetables, so pull them early.

Ninth, protect from pests. Early spring gardens are often attacked by aphids, mealy bugs and other insects. These populations can explode quickly so vigilance is key. Early infestations of these insects, before their numbers get out of hand, can usually be controlled by spraying them

with a strong stream of water from the hose. Beneficial insects, like lady beetles, lace wing larvae, and big-eyed bugs, see these insects as food and help keep these kinds of pest problems under control.

Tenth, harvest and enjoy the vegetables in a timely way. Many vegetables produce better if they are regularly harvested. Early removal of tomatoes, squash and melons keeps the plants in a production mode. An overload of ripe fruit tells the plant that it is time to shut down and lay off fruiting. Leafy vegetables, like leaf lettuce, will produce new foliage when the original leaves are harvested. In this way even small garden plots will be highly productive.

With a little planning, some tender care and considerable good, old-fashioned work, a gardener can soon be enjoying the fruits of all labors.

If you would like a copy of the leaflet, "Ten Steps to A Successful Vegetable Garden", or, if you have questions, you can reach one of the Master Gardeners at the Cooperative Extension office, 820 E. Cottonwood Lane, Building C, in Casa Grande. The telephone is (520) 836-5221. The author's email address is [gibsonrd@ag.arizona.edu](mailto:gibsonrd@ag.arizona.edu).

the number of irrigations in a week can be drastically cut back. This procedure will reduce stress on the tree and, in the long run, save water.

Another factor to consider when trees lose flowers is the age of the tree. Juvenile trees, trees that have been planted within the last three to four years, typically do not set fruit until they reach maturity. Most deciduous fruit trees, such as apricot, peach, and apple, may take several years to reach their full reproductive stride. Citrus trees may take up to seven to eight years before they are at full production. Pecan trees may take even longer.

It is often frustrating for new tree owners to purchase a tree in the nursery which has one or more fruit on the tree and then find that the tree does not produce any fruit at all during the following years. The reason for this lies in the size of the root system. When fruit trees are in pots, buckets, and boxes, the relatively small space within the containers limits the number of roots that the tree can produce. Plant maturity is determined when the tree develops a balance of energy between the leaves of the plant and its roots after it reaches full genetic size. In the container, the tree, even though still small, reaches a balance of energy when it has been in place for a period of time. The young tree, thinking it is mature, begins to use energy to set fruit.

When the tree is removed from the container and put into the soil, there is then sufficient space for the plant to begin putting out new roots, which causes the above-ground portions of the tree to also resume growth until it reaches its full potential size. The beginning of plant growth reverts the tree into a juvenile growth phase. During this time very little fruit will be produced, and then only sporadically, until the tree reaches maturity.

It is also important to remember that most fruit trees normally produce an overabundance of blooms. Citrus trees are a classic example of this behavior. It is not unusual to observe a citrus tree with a white cast of blooms over the entire tree. This is true even for young, juvenile trees. Of all those flowers, it is normal for citrus trees to keep only two percent; the other ninety-eight percent will fall off. In this case, a two percent fruit set is

considered to be a heavy crop and the flower drop is not only normal, but desirable.

The peach tree, however, is notorious for setting far too many fruit for its own good. For that reason, annual pruning is important to help the tree minimize the stress of a fruit overload. Up to 80 percent of the peach tree's previous year's growth should be removed to prevent the oversetting of fruit and the need for hand thinning later on in the growing season.

Finally, there is the issue of proper pollination. Pollination is the transfer of genetic material from the male parts of the flower to the female parts. Flower fertilization occurs when the pollen and the female egg combine to make an embryo within the developing fruit.

There are many conditions that can prevent pollination and fertilization, including lack of insects to carry the pollen from the male parts of the flower to the female parts; or in the case of dates, melons, squash and pecans, from the male flowers to the female flowers. Sometimes heat or cold will kill pollen before fertilization can take place. Sometimes the pollen is sterile or incompatible with the female parts of the tree. Most fruit tree pollination problems can be solved by choosing the proper tree varieties for our area.

Every year many peach, apricot, plum, apple, and citrus tree owners are frustrated because their trees load up with flowers in the spring with the promise of a great yield at the end of the season, only to find that their trees actually produce only one, two, or even no fruit that year. By following good management practices and having patience with young trees until they reach a mature bearing age, much of the frustration of seeing fruit trees without fruit can be avoided.

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How much fertilizer should we apply? We recommend about one pound of actual nitrogen per tree, per year for a mature, full-sized tree. That translates to about five pounds of ammonium sulfate or two pounds of urea. Make sure that you divide up the five pounds or two pounds into thirds and apply only one-third with each fertilization. Do not put five pounds of ammonium sulfate on each time you fertilize, you will burn the roots and harm the tree. For small, young trees, apply about two cups of ammonium sulfate or one cup of urea per tree per application. If you choose to use a different type of nitrogen fertilizer, make sure that you check the label on the package. If you are unsure, ask your nursery attendants or call us at the Cooperative Extension office.

The other major spring task, the one that you have been waiting to hear about, is corrective pruning. Here is what you have to know.

Citrus, you will remember, is an evergreen tree and does not naturally lose its leaves in winter. Citrus trees will drop frost damaged leaves after a cold snap, but we would prefer that they did not. Loss of leaves exposes the wood to sunburn, a serious condition that can affect the long term health of the tree. It is also true that citrus will normally drop a portion of their older leaves in preparation for replacement during the spring growth flush, but this year, we have also seen heavy drop due to frost.

Pruning of citrus should focus on maintaining the structure of the tree and the removal of dead wood. We are most concerned about branches that have grown across each other and are rubbing each other. When looking at crisscrossed branches, it is generally best to take the weakest of the two and leave the strongest unless the stronger branch is growing up through the middle of the tree. We want to maintain a good structure to the tree with major branches that trend towards the outside of the canopy. Remove entire branches back to their point of attachment instead of stubbing them off.

It is also important to remove any sprouts or growth below the bud union of the tree on both older and younger trees. You will be able to tell

the bud union by looking at the base of the trunk for a slight swelling. Sometimes there is a difference in the bark between the rootstock and the upper part of the trunk. It is best to remove the sprouts when they are small, not when they have grown into huge branches!

Dead wood on citrus should also be removed whenever it is seen, but spring is a good time to focus on this task because many of the leaves are off of the tree. Citrus wood may die for several reasons. Lack of water, shading out by a dense canopy of leaves or severe freeze injury may be culprits. Generally most dead wood will be small twigs and branches so small hand shears are the best tool of choice. Using the hand shears, nip out the dead twig clear back to where it attaches to a larger branch. Do not, I repeat, do not leave stubs! This can lead to other problems. Take the entire branchlet away. Try not to prune out any wood that is alive so scratch the bark gently on the affected branch and look for dry and brown or moist and green wood. If it is moist and green, it is still alive and should not be pruned off.

If the major scaffold branches are exposed to the sun, and pruning may create this situation, protect the tender wood by painting the trunk and branches with a white, latex, water-based paint to reflect the hot sunlight and help prevent sunburn.

There are several spring tasks that need to be done each year to ensure good citrus tree health. With the wonderful spring weather that we are now enjoying, now is the time to get out and get them done.

far enough apart to allow the tiller to pass safely between the rows without damaging the plants.

A flat blade attached to a handle by a hoop is called a weed hook. This tool works with a swinging motion and, if handled correctly, can slice weeds off close to the surface of the soil. It is quite effective for clearing large patches of weeds in wide open spaces. The blade must be kept sharp with a file in order to work at peak performance.

When using a weed hook, it is important to make sure that the work area is kept clear of pets and people. The swinging motion of the hook can cause serious injury to those unaware of the danger. A new operator may find that it is difficult to keep the blade out of the dirt and away from rocks as it is swung back and forth. Practice will soon provide experience to correctly judge the correct height to swing the blade.

String trimmers, which are normally used to edge lawns, are also good weed control tools for alleys and other open spaces. A low horsepower, thin-lined model will work good for small weeds, but once the weeds mature, a larger machine with heavy line will be needed to cut through their tough stems. Because the whirling string can kick up small rocks and sand, it is important to wear eye protection.

When using string trimmers to cut grass and weeds around the trunks of trees and shrubs, remember that the string can easily damage the tender bark of many plants. Girdling a trunk or stem can cause enough damage to kill the plant. Always place a shield around the trunks of these plants before approaching with the string trimmer.

The standard lawn mower also makes a good weed control tool. Heavy duty and rugged, a lawn mower can easily cut through most weeds. If it is equipped with a catch basket, it can save a step in the clean up process by taking away the need to rake up the weeds after cutting. The power mower is excellent for a quick alley cleanup, but it is important to make sure that all rocks are removed before mowing so that damage to the

mower blade and injury to pets, children and innocent bystanders does not occur.

Weed control can be a challenge in any type of garden or landscape, even low maintenance desert landscapes, but a few tools can make mechanical removal of weeds more effective and easy.

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