



Pinal County Cooperative Extension Garden & Landscape Newsletter November 2007



GROW YOUR OWN VEGETABLES USING SQUARE FOOT GARDENS

I was recently asked if there was anyone close by growing organic fruits and vegetables for sale.

Nationwide, there is a growing trend of people who are searching for healthy, locally grown produce. In some parts of the country, they participate in community supported agriculture associations (CSA's) or they buy food from their local farmers market. The popularity of these and other food sources seems to be growing and I have been waiting for the idea to catch on here in Pinal County. So far, the interest has been up and down. As of this time, I have to admit that I do not know of anyone in this area producing organically certified produce for sale. However, if you really want organically grown food, there are options.

Right now, the best option for those wanting to be assured of the quality and growing history of the fresh vegetables that they eat is to grow it themselves. Okay, you can stop rolling your eyes! I know, I know, I am so predictable, but, the truth of the matter is that if you want to be sure that your spinach, lettuce or other greens are not infested with E. coli then you really need to know about the production practices and habits of those who grow and sell your food. The only sure way to know that is to know the producer, and whoever touches your food after it leaves the field. If you grow your own produce, you can answer your own questions.

—**SQUARE FOOT GARDENING, PAGE 3**

PRUNING TIPS FOR GARDEN AND LANDSCAPE TREES AND SHRUBS

Okay, what are you doing with those pruning shears in your hands? Let's hang 'em back up, show a little patience and wait until it gets a little colder before we start making those pruning cuts.

Proper pruning is an important step in keeping trees and shrubs healthy and looking their best. Some fruit trees need to be pruned annually to maintain good production and form. Sometimes landscape trees need to have major branches removed. December, January and the first part of February are considered to be the best months to do this heavy pruning.

Pruning is the removal of selected limbs and branches to benefit, not harm plants. Properly done, it is a normal and proper management tool. However, there are definite rules that need to be followed or unnecessary damage may result.

Bearing fruit trees that lose their leaves each year during the winter, like peach, plum and apricot, must be pruned annually to keep them in peak production. Citrus varieties on the other hand need very little pruning to keep them in good condition. Shade trees often require the removal of structurally weak or damaged branches for safety and appearance. Shrubs and vines need trimming to keep them looking good.

Heavy pruning, or the removal of major branches, is best done when the plant is in its dormant or resting stage. For most plants, dormancy occurs during the coolest part of the year. For deciduous trees, those that lose their leaves during winter, and for most evergreen plants, the best time to do heavy pruning is during the cool weather months after the leaves have fallen but before the buds begin to swell and crack open in the spring.

All pruning cuts should be made at a forty-five degree angle and should be clean and smooth without a ragged surface. The branch, no matter what its size, should be removed at the point where it emerges from its supporting branch or limb, the point of attachment. Do not leave ugly stubs upon which a hat could be hung as these will most often die. Dead wood often provides an entrance through which diseases and insects can enter.

—**PRUNING TIPS, PAGE 6**

IN THIS ISSUE:

GROW YOUR OWN VEGETABLES USING SQUARE FOOT GARDENS	1
PRUNING TIPS FOR GARDEN AND LANDSCAPE TREES AND SHRUBS	1
KEEPING LAWNS HEALTHY	2
PROTECTING PLANTS FROM COLD DAMAGE	2

KEEPING LAWNS HEALTHY

It really was an intriguing question. I don't want to mow a lawn all winter, so I am not going to over seed this fall. However, is there something I should do now to ensure that my grass comes out of dormancy next summer healthy and strong?

I love these kinds of questions: proactive, straight to the point and easy to answer. Too often questions come after a plant is either dead or too far gone to help. To be able to help keep plants at their peak is a county agent's dream.

Beautiful lawns don't just happen. They take considerable labor and a lot of attention to keep them attractive. Good seedbed preparation before planting, proper fertilization, and plenty of water will go a long ways in establishing and maintaining a satisfactory lawn.

Because of the extra labor and expense necessary to maintain lawns, many elect to cut back or eliminate turf areas in the landscape. Bermuda grass requires forty-four inches of water each growing season to remain healthy but rainfall during the season may only measure one or two inches. The remainder must be supplied by an effective and efficient irrigation system. Without proper irrigation, turf will stop growing and go dormant. Regular mowing, weeds, diseases and insect problems can also be negatives.

On the other hand, turf can also provide benefits. Research has indicated that homes surrounded with trees, shrubs, and ground covers are significantly cooler and use less energy than homes with predominantly bare surface areas. The pleasant beauty of a healthy lawn leads many to devote at least a portion of the landscape to turf.

The choices for lawn grasses vary by climate. Warm season grasses grow actively during the late spring, summer, and early fall months. At other times of the year, they are in a resting or dormant state, and are brown in color. Warm season grasses include Bermuda grass, zoysia and St. Augustine. Cool season grasses grow best at higher elevations in the county, such as Oracle, or during the spring, fall, and early winter months of the lower deserts. The major cool season grasses include Kentucky bluegrass, ryegrass, tall fescue, and fine-fescues. Annual ryegrass is the cheapest and easiest to plant and care for so we use it almost exclusively to over seed Bermuda grass lawns for winter green.

PROTECTING PLANTS FROM COLD DAMAGE

Are your plants ready for frost?

While the days are toasty warm and the nights pleasant right now, that will soon change. Sometime towards the end of November or early December, if everything goes true to form, there will be a frost. When that night comes, unprotected, frost-sensitive plants will get fried. Here are a few suggestions, ahead of time, to protect sensitive plants during our chilly winter nights.

The most common type of cold weather injury occurs when low temperatures and humidity combine with calm and clear nights to cause surfaces such as leaves, soil and car windshields to cool faster than the surrounding air. The moisture in the air condenses and freezes in place. This condition is called a frost.

While frosts are usually easy to protect against, a freeze may take a little more diligence on the part of the gardener. Freezes occur when temperatures drop below 32° F. All plants have a specific temperature at which they will begin to suffer damage. Once that temperature is reached, damage begins. Lemons, for example will begin suffering damage right around 32°F while oranges usually do not start showing freeze damage until 26°F or below. The Florida citrus injury has sustained devastating damage from plunging temperatures in the past and the state's citrus belt has gradually moved south as a result of these freezes. Fortunately, freezes do not often occur in the desert areas of Pinal County. Nevertheless, whether it is a frost or a freeze against which we are contending, protection of tender plants is critical.

When thinking of cold weather protection, most people immediately think of covering their plants at night, and that is exactly right. Improperly done, however, covering will actually afford little protection and may actually harm tender plants.

When covering plants, it is best and safest to use a fabric covering material. Plastic tarps and table cloths will not provide sufficient insulation to keep plants warm during heavy frosts and freezes.

Remember, natural cold descends from the atmosphere during the night. Natural warmth radiates upward from the earth, which is heated during the day by the sun. When the amount of cold overpowers the amount of radiated heat and temperatures go below what sensitive plants can endure, cold damage can occur. Coverings shelter plants from the cold air that is descending down upon the plants and trap the radiated heat that is moving upward from the earth. This minimal protection often is quite sufficient to keep tender plants from harm.

In order for coverings to be successful, they must accomplish each of these two tasks. To do this, they must extend all the way to the ground. Full coverage will keep the warmer air trapped inside from escaping. They must also be put in place before it begins to get cold, which usually means late afternoon. They

I do not mean to imply that food available through our established markets is unsafe. The food sold in our stores is safer than probably any other place in the world. How often do you hear about a health problem associated with our food? Not very often. However, on rare occasions mistakes can happen and we just have to deal with it. If we grow our own food, and a mistake happens, at least it is our mistake. For this reason, and until we see interested producers begin to grow local produce for local distribution, we need to think about our own vegetable gardens.

Some years ago, Mel Bartholomew made Square Foot Gardening popular when he published a book by that name and today many find that his system is just right for their needs. In our time of shrinking yards and increasing costs of water, small, intensively managed kitchen gardens can produce the quantity and quality of food that we require for our own consumption.

Gardening by the square foot requires that available space be divided up into 12 inch by 12 inch squares each separated by some type of wood or concrete barrier. Each square becomes, in itself, an individual garden, and can be managed independently of all the other squares, if necessary.

Each square usually receives just one plant, especially if that one plant will reach a large size at maturity. The 144 square inches of space are enough to support the roots of one large plant but not more. Some plants that do not have a large, spreading root system, such as carrots, baby lettuce, or some flowers may be planted to a higher density. However, the higher the plant density, the more intense the management must be in order to guarantee success.

Gardening by the square foot requires good management consistently applied throughout the growing season. Because of the much smaller area, there will be fewer plants to produce the food or flowers needed for the home and, thus, there is a much smaller allowance for error.

In a large garden, the loss of one or two plants usually is hardly noticed, but in a square foot garden, the loss of even just one plant can carry heavy consequences. The gardener must be careful that water, nutrients, and pest control strategies are applied at the right time and in the correct amounts to ensure that the garden produces satisfactorily.

The square foot garden works because it allows the gardener to focus attention to individual plants as necessary. Because of this, most plants will be healthier and consequently more productive than those lost in the crowd of a larger garden.

If the small area garden is correctly designed, and with good management, it is quite possible to have a year round

garden producing many of the fruits, flowers and vegetables that are so much enjoyed by many people.

First, it is important to design the beds so that they can be easily worked from the edges without having to step into the garden proper to reach the plants. A long, narrow bed, no more than 4 feet wide, but as long as necessary to give the volume of food and flowers needed by the gardener is a common arrangement.

Second, a simple and reliable watering system is essential. Many use a drip or soaker irrigation system attached to a timer to take away the risk of forgetting an irrigation. In summer heat, this could be a fatal omission.

Third, plan ahead for weed and insect control. For most weeds and large insects, like caterpillars, hand picking may be the easiest way to eliminate these pests. For invasive, perennial weeds like nutsedge and Bermudagrass, and for tiny insects like whiteflies, aphids and mealybugs, be prepared to use some other form of pest control appropriate for that specific pest.

Redwood 2 X 4 lumber makes good borders for the square foot garden because of redwood's pleasing color and resistance to rot. It is a little more expensive, but it will last longer than other types of wood.

Select garden varieties that are specifically adapted to our local conditions. With intensive management, it is possible to nurture along some varieties that otherwise would not usually do well in this environment, but for best results, use the tried and tested varieties.

Finally, consider adding hoops to the garden to support clear plastic coverings during the winter and sun screens during the summer to extend the growing seasons and improve produce quality.

Supporting hoops can easily be installed using 1 inch PVC plastic pipe. Drill 1 inch holes into the tops of the 2 X 4's almost all the way through the wood every 2 feet using a 1 inch hole saw attached to a power drill. It will be into these holes that the PVC ends will be inserted. For a 4 feet wide bed, use 10 feet long pipe for best results. Some gardeners have used metal stakes driven into the ground instead of drilling the holes. The PVC pipe is fitted over the stakes to keep them in place.

Stabilize the tops of each of the individual hoops by cutting holes into another 2 X 4 at the same distances as were cut into the bed frames. Get someone to help as each individual hoop is threaded through its respective hole. Once the ridge pole is in place, the ends of the pipe can be inserted into the bed frame holes or fitted over the metal stakes.

PROTECTING PLANTS, CONTINUED FROM PAGE 2

must not be removed until temperatures rise to a safe level, usually well into the following day. Covers are removed to allow the sun to reheat the soil underneath the plants. This will provide warmth for the next night's protection.

Cloth, cardboard or paper coverings insulate better against the cold than plastic coverings. However, plastic could work for frost protection if the temperatures do not dip too low. Plastic tends to radiate heat faster than these other coverings and are a little more risky to use. In a pinch, and if plastic is all that is available, rig a frame to hold the covering off of the plant foliage. The cold temperature of the plastic itself could damage tender plant tissue.

Extra warmth can be provided for the most tender or most valuable plants, by placing a low watt light bulb inside the covering. The extra heat from the light bulb can help keep the air temperatures inside the tent high enough to avoid plant tissue damage. In doing this, do not forget safety. Do not let the light bulb touch the covering or the leaves or stems of the plant. Coverings could catch fire and tender tissues can be damaged by the heat.

Use an outdoor extension cord and make sure that there is no standing water that could cause an electrical hazard. Do not forget to turn the light off during the daylight hours to save money and avoid the possibility of plant damage.

Commercial citrus producers use large fans to warm air around the trees by mixing cold air trapped against the surface of the earth with the lighter warm air above. They also occasionally, during the worst weather, will flood irrigate the trees during a freeze or frost. Neither of these are recommended for the home owner. Fans are expensive, must be placed high enough to encounter the warm air and are noisy, all of which make fans impractical in the home environment.

Flood irrigating works on the principle that water must give off heat to freeze and the slight amount of heat released can moderate the sharp plunges of temperature during a frost. Flooding is risky because water must be present for the complete duration of the freeze or frost or the colder temperatures resulting after heat release may worsen the damage.

The easiest form of frost protection is to create and use microclimates in the garden. Citrus trees, for example, do well in the narrow spaces between houses because the close proximity of the walls tend to protect them from plunging temperatures. Heat-loving and frost sensitive plants like bougainvillea and hibiscus seem to do best on south-facing walls with an overhanging roof.

Cold weather protection requires planning and careful watching of weather patterns. If we are not alert, damaging temperatures may creep up on us unawares. A little time spent in planning and preparation before cold weather injury occurs will definitely result in healthier plants and a lot less work later on.

SQUARE FOOT, CONTINUED FROM PAGE 3

With the center 2 X 4 now at the peak of the hoops, it will act as a spacer to keep each hoop at the appropriate distance from its neighbor. Stabilize the entire top by staking down the hoop assembly with guy wires or with wood braces at the ends of the bed. Screws inserted through the sides of the garden bed frames into the PVC pipe ends will keep them from working their way out.

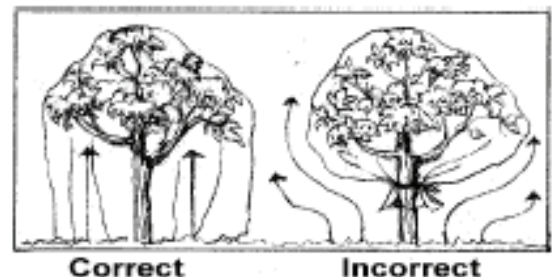
Clear plastic during the winter time will keep beds warmer during the cool weather period. If freezing is a risk on cold nights, drape a quilt or sheet over the frames until the sun comes up the next day. If it becomes too hot inside the beds, cut slits through the plastic to let the hot air out. Since the plastic will probably not last more than one season, this is not too much of a loss.

Summer heat and high sunlight intensities can be minimized by spreading shade cloth over the hoops during the summer months. It will keep the garden plants a little cooler and protect tender fruit from sun burning.

By modifying the climate just slightly during the growing season, it is possible to have tomatoes year round and to improve the quality of most other plants in season.

For those who are ready to get started in producing their own food, search the bookstores or the library for a copy of Square Foot Gardening by Mel Bartholomew and let him give you the benefit of his experience. You can also get lots of information from his website at <http://www.squarefootgardening.com>.

Frost Protection



Bermuda grass lawns actively grow from mid-April to mid-October and handle the intense desert summer heat well. Common Bermuda grass is the more hardy type of Bermuda grown but it also produces pollen and seeds that can cause problems for those who suffer from allergies. Hybrid Bermudas do not produce pollen or seed, have a finer texture but are more susceptible to diseases and insects than common Bermuda.

Common Bermuda grass is easily established from seed and grows best when mowed between one-half to three-quarters of an inch with a reel type mower. It can also be mowed between one and one-half to two and one-fourth inches with a rotary mower.

Hybrid Bermuda grasses are the result of mating common Bermuda grass with African Bermuda grass. The result is a plant which has fine leaf texture and does not produce pollen or seed. Hybrid Bermuda grasses have narrower leaf blades which are attached closely to each other on the main shoot. They also have more individual shoots per square inch of turf than common Bermuda grass. Because of this dense growth habit, hybrid Bermuda grass varieties can tolerate shorter mowing heights.

The Tifgreen variety, for example, can be mowed at one-fourth inch or less with special maintenance practices. Most other hybrid Bermuda grass varieties are adapted to mowing heights of one-half to one and one-fourth inch with a reel mower. Higher mowing heights of one and one-half to two inches with a rotary mower in these varieties can result in an uneven growth habit. Mowing turf with differing grass heights often results in cutting too high in one spot and mowing too close in another. It becomes extremely difficult to prevent unsightly scalping in these situations.

Hybrid Bermuda grass varieties are established from vegetative plant parts, and not from seed. It is commonly established through sodding, stolonizing, planting the underground stems and to a lesser extent, plugging, cutting small sections from pieces of sod and planting the pieces scattered through the lawn area.

Zoysia grass is a warm season grass which grows somewhat slower than Bermuda grass. The leaves are dull green and flat, and end in a long point. It produces rhizomes and stolons. Zoysia has tough leaves and stems which gives it excellent wear tolerance during the summer. Once injured, it is slow to recuperate, compared to Bermuda grass. It is not as salt tolerant as Bermuda grass.

Zoysia is established by sod or sprigs. Some seed is available, but it is expensive and hard to germinate. Zoysia likes to be cut at three-quarters of an inch, but can be cut higher with a rotary mower. Zoysia lawns require periodic dethatching to remove the spongy layer between the green leaves and the true soil. Zoysia is active during

the summer months, and goes off color when dormant in the fall and winter months. Zoysia does not over seed as well.

St. Augustine is a warm season grass which has broad leaves and a very flat shoot. This grass is shade tolerant during the hot summer. However, the new turf-type tall fescues offer equal shade tolerance, and will stay greener into the fall and early spring. St. Augustine is established by sod or sprigging and is established during the summer months. It is susceptible to diseases if it is over watered and over fertilized in the summer. This grass does not over seed well.

Turf grasses in our area do best when fertilized and irrigated properly. The element most often needed to keep lawns green and growing is nitrogen and on a year's basis, 1000 square feet of sod will need about one pound of actual nitrogen each year. This translates out to about 5 pounds of ammonium sulfate, 21-0-0 or two pounds of urea, 45-0-0. I like to make three applications per year by dividing up the total recommended fertilizer into thirds. I make the first application in May or June after the Bermuda begins to actively grow, once in July and once in August or September to help store up strength for the coming growing season. Some dedicated people fertilize once a month, but they are always careful to never exceed the total recommended amounts.

Irrigation is also the key to a successful lawn. All turf grasses in our area must be irrigated on a regular basis. If they do not receive the correct amount of water, they go dormant or die out. It is important to know how much water your turf grass needs at any given time of the year and make sure that it receives the proper amount.

The easiest way to tell when it is time to irrigate is to shove a screwdriver, or some other sharp probe, into the soil and see how easily it slides in. When the soil begins to dry, it becomes ever more difficult to insert the probe. When this happens, it is time to irrigate. Even when the grass goes dormant after the frosts of winter, it is important to once a month or so provide a deep irrigation so that the roots and underground stems stay moist and healthy. Use your probe to determine when it is time to irrigate.

All of this is nice, you say, but I still haven't answered the original question completely. So here is the direct answer. If we choose our turf species and varieties carefully, mow correctly to allow enough green leaf area to build and store food for the plant, fertilize three times a year with a good nitrogen fertilizer and water appropriately, turf grass in Southern Arizona should give years of excellent service.

Always remember to use the correct tool for the job. Do not try to cut branches with hand shears or loppers that are too big for the job. It will often result in damage to the tool, the plant and to the person performing the operation.

Trees have the natural ability to heal themselves quickly if branches are properly removed. There is an area of swelling at the base of branches called the collar which contains large amounts of cells that can actively divide and quickly grow to cover the wound in one or two seasons. This collar is extremely important to the plant. It should never be cut off during the pruning process.

Recent research has shown that pruning cuts left unsealed with paint or pruning sealer heal faster in our dry, desert climate than when the cuts are sealed. Leaving fresh cuts open to the air is the best policy.

We have recently talked about the correct procedures for pruning peaches, apples and other deciduous fruits. So let's talk briefly about some of the other plants.

Citrus trees do not need pruning to maintain fruit production like apples, peaches and plums. The fruit are mainly borne at the tips of the tender branches and removal of these tips will result in reduced fruit production the following year. However, dead branches that have been shaded out in the interior of the tree can be removed at any time.

Some desire to shape citrus to a certain form and are not overly concerned with fruit production. When shaping citrus for ornamental purposes, do not cut so deeply that sunlight will be able to penetrate the canopy and strike the bark of the trunk and limbs. The wood is extremely sensitive to sunburn and could result in serious damage to the plant. Again, shaping will reduce fruit production.

For peak production, each grape variety should be pruned to the system that best suits its growth style. Since grapes produce fruit on wood that grew last year, wood produced in earlier years should be completely removed and new wood should be selected for this year's production. Thompson Seedless, the green seedless grape so common in our area, should be cane pruned. Flame Seedless and Perlette should be spur pruned.

Cane pruning requires the removal of everything but two to four canes of new wood. These should be medium sized canes from last years growth and each cane should be cut back to eight to twelve nodes, the bumps along the cane from which the leaves and fruit clusters emerge. The number of nodes to leave depends upon the strength of the vine. The leaves and fruit will be produced from this wood. For each fruiting cane that is left, there should also be a spur. This is accomplished by selecting another cane in the same region as the fruiting cane that is cut back to two nodes. New growth from this spur will provide the fruiting canes for the following year.

Spur pruning is much easier and takes less time than cane pruning. Vines are trained into two cordons, permanent arms that spread in opposite directions from the trunk. New wood grows from nodes along the cordon. These canes are cut back to two node spurs. Each fruiting position along the cordon can usually support two spurs. The leaves and fruit for this year will come from growth emerging from the spurs.

Large landscape trees need not be heavily pruned. Stubbing back is never recommended as it is very hard on the trees and could shorten their life. Shade tree pruning usually requires the removal of branches that are rubbing against each other, that are growing straight up through the tree canopy or that are obviously damaged or diseased. Sometimes tree branches begin rubbing existing structures like walls and roofs of houses. These can be removed, but care should be made to cut them back to the limb from which they emerge. Do not leave stubs.

Specimen shrubs and hedges usually are trimmed throughout the growing season, but occasionally they must be cut back heavily to restore them to proper size or to renew growth. This heavy pruning should be timed to coincide with the emergence of new growth.

A hedge severely cut back in early January, let alone right now, will remain ugly until growth begins in the spring. Delaying pruning until just before growth begins will shorten the time that the shrubs are barren of leaves. However, do not wait until growth begins as this will result in a delay while the newly exposed buds are stimulated to begin growth. This type of pruning should be done in late January or early February.

Finally, if you are not sure whether the procedure that you are about to perform is correct, get advice.

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 x204. The author's email address is gibsonrd@ag.arizona.edu.

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Extension Agent, Agriculture

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