SELECTING DECIDUOUS FRUIT TREES FOR DESERT CLIMATES

With the tree planting season in full swing, now may be a time to figure out what varieties of deciduous fruit trees to plant in your yard.

Variety selection is one of the most important decisions a grower must make prior to planting deciduous fruit trees. A plant variety is simply a plant that is different from its close relatives because of a consistent genetic trait. The ‘Anna’ apple, for example is a variety of apple that grows well in the desert, while the ‘Red Delicious’ does not. Knowing which variety to select for good growth and production is not difficult if we understand the basic botanical principles that govern variety selection.

A tree variety that cannot cope with the environmental conditions of the desert will almost certainly fail to produce a quality crop when it matures. Once the tree is in the ground, it is difficult to correct mistakes. For that reason, it is important to make the right selection before planting.

In general, the best deciduous fruit and nut varieties for the desert areas of Southern Arizona are those that demonstrate good pollination characteristics and have a low chill requirement. The deciduous fruits are those that lose their leaves during winter. They include peaches, apricots, apples, plums and pecans. This discussion will not apply to citrus because all types are ‘self’ fruitful and do not have a chill requirement.

Cold chilling, chilling requirement and chill units are terms that are used to describe a botanical principle that describes why some trees require a particular number of accumulated hours each year between the temperatures of 32°F and 55°F in order for flower and leaf buds to develop normally. The buds of plants with this requirement have the genetic ability to keep track of the total number of hours that accumulate between these two temperature limits each year.

Cold chilling works this way. When the ambient air temperatures reach 55°F and continue to descend, the buds of each tree begin to recognize the lapsing time. When the temperature reaches 32°F they stop accumulating chill units. As the air warms to reach 32°F once again, the buds begin recognizing the passing time until the temperatures reach 55°F when the accumulation stops. The eventual accumulation of total hours within the range fulfills one of the requirements that tells the plant each spring to begin its growth and reproduction cycle.
There is also a down side to the process. The tree also recognizes when the air temperatures exceed 60°F, and subtracts the accumulation of time above that temperature from that accumulated within the desirable range. Warm winters can cause significant problems for growers wanting or needing a crop.

Trees that have not received the necessary number of chill units during the dormant period will show symptoms of delayed and extended bloom, delayed budding of leaves, reduced fruit set and reduced fruit quality. These symptoms are dead giveaways that the tree has a chill unit problem.

The approximate number of hours needed for normal development varies depending on the variety. Some varieties of trees may require a thousand hours or more of chill units before they can be productive. In the desert, it is rare that we would ever see an accumulation of chill units of more than six hundred units.

In most years, the low desert areas accumulate an average number of chill units of between three to five hundred, well below the required hours of the more popular varieties of fruit, such as the ‘Red Delicious’ apple, the ‘Bartlett’ pear and ‘Elberta’ peach. In the desert, varieties that have a low chill requirement are best.

Fruit varieties that require the least amount of cold temperatures, or low chill varieties that grow well in Southern Arizona include the ‘Anna’ and ‘Dorsett Golden’ apple; the ‘Desert Gold’ or ‘Flordaprince’ peach; the ‘Orient’, ‘Floridahome’ or ‘LeConte’ pear; the ‘Katy’, ‘Gold Kist’, or ‘Castlebrite’ apricot, and the ‘Santa Rosa’ or ‘Satsuma’ Japanese plum.

Another critical issue in selecting fruit tree varieties is pollination. For fruit to form, pollen from the male portions of a flower must be transferred to the female portion so that fertilization can occur.

Some fruit trees are self-fruitful, which means that the pollen produced by the tree’s flowers will successfully fertilize the female portion of the flower. Apricots, for example, are self-fruitful, so only one tree needs to be planted to produce fruit.

Other fruit trees do not do a good job of pollinating themselves, if at all, and are termed self-unfruitful. In this case, it is important to plant another tree of the same type but of a different variety. The pollen from one tree will then pollinate the flowers of the other tree. The cross-pollination that occurs between trees allows each tree to successfully set fruit each year.

The pecan tree is a good example of a tree that needs to have two different varieties planted in close proximity to yield up to its full potential, although the ‘Western Schley’ will do fairly well by itself if there is room at the planting site for only one tree.

Most apples and Japanese plums are also generally self-unfruitful. The low chill apple variety ‘Anna’, however, will set fairly well by itself. Even still, it does seem to do best when it is cross-pollinated by another variety, such as the ‘Golden Dorsett’. The ‘Santa Rosa’ plum also sets fruit fairly well without cross-pollination.

It is no secret that good tree fruit and pecans can be grown here in the desert. The key to success lies in selecting varieties of trees that have a low chilling requirement and good pollination characteristics.
**GROUND COVERS FILL A LANDSCAPE NICHE**

In today’s busy world, a green lawn may be simply too much to care for. A hardy, low maintenance ground cover may be the answer for that one spot that needs something to give your landscape that finished look.

Groundcover plants are creeping, sprawling, or vining plants whose primary function is to cover the surface of bare ground areas in landscapes. Groundcovers include plants that come in a wide range of shapes, sizes, textures, and colors. Many bear attractive flowers that add seasonal beauty to their other good characteristics.

Groundcovers fill a number of important design needs. They can form a low horizontal foliage mass that serves to organize or link landscapes together into a unified composition. Groundcovers are equally effective in landscapes for one-story residences, tall office buildings, or even highway embankments. They can soften and add a touch of greenery to the large, rock-mulched areas so often seen in desert landscapes. Large expanses of paving also look cooler and more interesting if beds of ground covers are occasionally substituted for sections of pavement. Ground covers that take root along the ground as they grow can both control erosion on steep slopes and eliminate mowing turf on small or oddly shaped areas or on difficult banks or mounds.

Groundcovers differ in the amount of foot traffic they will tolerate without injury. Although none can withstand the heavy use that turf grasses receive, a few species are adapted to light traffic. However, others are so brittle or tender, that it is nearly impossible to walk on them without causing damage.

Those who are unfamiliar with the general growth characteristics of groundcovers may expect these plants to provide a permanent foliage cover once the planting has filled in. Unfortunately, this is often not the case. Within two to four years, many groundcover beds will develop bare spots or areas of sparse, open foliage. This occurrence may be due to weather, cultural practices, pests, or the gradual change from vigorous young leafy plants to older, tougher, less dense foliage plants. As a result, most groundcovers do require regular care and refurbishing to keep them dense and vigorous. In addition to proper irrigation, fertilization, and pest control, replanting bare spots and pruning or mowing old stems may be required to stimulate new growth.

Many gardeners and landscapers attempt to establish dense groundcovers in desert landscapes that receive little or no irrigation. This is nearly impossible to accomplish, even with drought-tolerant species. The nature of the desert is such that vegetation is scattered with areas of open ground in between. Low-water-use groundcovers will assume a similar growth pattern if they must survive and grow with natural precipitation only. Supplemental irrigation is required for a solid foliage cover even with arid plant types.

Groundcovers are often used in areas where growing conditions are less than ideal. They may be planted on steep dry slopes in full sun or deep shade. In addition, most types grow close to the ground where they are exposed to a microclimate of exaggerated heat or cold. It is essential that the soil be properly prepared in order to facilitate good plant establishment and growth.

The best planting times are fall and early spring. Plants set out in either season will develop a good root system before the stress of hot summer weather. Groundcover plants should be spaced in a new bed so that they will cover the site in one or two growing seasons. This practice reduces weed control problems and usually results in a smoother cover with no mounding by individual plants.

The soil should be prepared before planting by tilling and removing rocks, clods, and other large debris. Make sure that the hole for each plant drains well. A good way to do this is to fill the holes with water, then check to see how long it takes the water to drain into the soil. If it takes longer than thirty minutes, you may have a problem. Check the soil to see if there is a caliche layer or hardpan restricting the flow of water into the soil. Set the plants in the hole slightly deeper than they were growing in the container and gently put backfill soil around the roots. On banks and slopes, leave a shallow basin around each plant to hold irrigation water.

Invasion by bermudagrass is the primary reason that ground cover beds fail to thrive. Bermudagrass often invades ground cover beds in summer when outdoor gardening activity is reduced, and once it is well-established, this aggressive grass is

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**Ground Covers** . . . Continued on Page 4
difficult to eradicate without also destroying part or all of the ground cover. Removing even small infestations from around
tender or brittle ground cover species is impractical because of the difficulty in getting into the bed without damaging
plants. Thus, one should eliminate this would-be weed before planting ground covers and immediately remove any
bermudagrass that might regrow later.

As a weed, bermudagrass is not impossible to control but it is difficult unless a selective herbicide, a weed killer that will kill
grasses growing among broadleaf plants, is used. Most groundcover plants fall in the broadleaf category, which makes the
use of a selective herbicide possible. Bermudagrass is less likely to invade the growing area once the groundcover plants
fill in the bare spaces between plants. If herbicides are going to be used, plan on making at least two or more treatments
during summer to ensure that complete control is achieved. Read any labels and labeling material to make sure the product
fits your particular need.

Tender young ground cover nursery stock dies quickly if allowed to dry out; therefore, it is important that plants be watered
thoroughly a short time before being removed from growing containers and placed in the ground. Irrigate the bed area
several days before planting so that the transplants will be set out in moist soil. Because it may take several hours or longer
to complete the planting operation, the first plants set out may dry out before the job is finished, especially on a warm,
windy day. To prevent such losses, stop at regular intervals to water transplants. A mulch of coarse bark or wood chips
over the finished bed will keep the ground cooler, conserve moisture, and discourage weeds.

Young ground cover plants are shallow rooted and may need watering every two to three days for the first two to four
weeks after planting. When established, the same plants may require watering every five to ten days in hot, dry weather,
but only every two to three weeks in the winter.

Once established groundcover plants will need specific care, especially water and fertilizers. Since it is common to plant
groundcover plants on modified slopes or artificial hills in the landscape. It will be important in these cases to ensure that
water penetrates the soil and fills the entire root zone instead of running off the slope and ending up off target. Whatever
the type of irrigation system used, it is important to apply water only as rapidly as the soil will absorb it. It may be
necessary to irrigate for several brief periods with timed intervals between each cycle so that the entire root zone will be
moistened without wasteful surface runoff. A drip irrigation system can be used to water ground covers on slopes. Also,
many ground covers should be watered on a different schedule than turf, so their irrigation system should be separate from
the lawn’s.

Because ground cover plants compete for nutrients, they should be fertilized regularly to maintain good leaf color and
moderate growth. Fertilize established ground covers at once each year in late winter or early spring. A second application
in early fall may be needed to maintain good color and growth. Over-fertilization results in excessive growth that requires
more work to maintain and keep presentable.

Nitrogen is a key nutrient that is regularly lacking in desert soils so it is important to select a fertilizer product that has a
significant amount of nitrogen in the analysis. The percentage by weight of nitrogen in a fertilizer is indicated by the first
number in the analysis, such as 21-0-0 and 16-20-0. This information is printed somewhere on the fertilizer bag. A typical
fertilizer recommendation for mature ground covers is two pounds of ammonium sulfate (21-0-0) or other garden fertilizer
of similar nitrogen content per 100 square feet per year.

It is important to spread the application of fertilizers out over the course of a year. Do not apply the full amount of fertilizer
all at one time. Apply the fertilizer uniformly when the foliage is dry, then water the plant thoroughly to wash off any
fertilizer particles lodged in the plant foliage and to move the nutrients into the plant root zone. Nitrate nutrients tend to
move with water which makes it easy to get it into the vicinity of the feeder roots, but that can also be a problem because
applying excess water can quickly leach the nutrient below the root zone. Once that happens, it is lost to the plant.

Ground covers are generally more attractive if pruned back each year in late winter or early spring. However, wait until
danger of frost is over before cutting back tender species. Ground covers that grow rapidly may need trimming two to
three times during the growing season. The appearance of the planting will usually serve as a guide for scheduling pruning
work. To encourage a ground cover bed to recover quickly, fertilize and irrigate after pruning is done.
Have you ever found a plant that you would like to have in your own yard but do not know where to find it? For a fun garden project, try creating your own new plants from cuttings.

Growing new plants from parts or pieces of older plants has long been used as a means of increasing plants for landscape purposes. Cuttings are a simple tried-and-true method of acquiring new plants to plant in our own landscapes or for sharing with friends. It is so simple, even children can have a great time helping with the project.

Cuttings involve rooting a severed piece of the parent plant and planting it into soil in such a way that new roots begin to grow and new leaves start to sprout. Some types of plants are easy to propagate by cuttings, while others are more difficult. For those that would like to try out their green thumb, follow these basic steps.

Many types of plants, both woody and herbaceous, are frequently propagated by cuttings. A cutting is a vegetative plant part which is cut from the parent plant in order to regenerate itself into a completely new plant. Most gardeners who have propagated new plants have started cuttings from plant stems, roots, or leaves. Stem cuttings are of three types: softwood, semi-hardwood, and hardwood; depending upon the maturity of the wood at cutting.

Softwood cuttings are taken from wood actively growing in the spring until late summer that is near the growing tip of the plants. They are some of the easiest and quickest-rooting of the stem cuttings. The wood should be actively growing, soft, succulent, flexible new growth. Plants that are well adapted to softwood cutting are coleus, Euonymus, chrysanthemums, rosemary, ivy, philodendron, and pothos.

Semi-hardwood cuttings are taken after the active growing season or after a growth flush, usually in summer or early fall. Wood appropriate for propagation will be firm enough that a sharply bent twig snaps; if it just bends, it is too mature for satisfactory rooting. Pyracantha, monks pepper, viburnum and lantana propagate well from semi-hardwood cuttings.

Hardwood cuttings come from mature, dormant wood produced during the previous year’s growing season. Generally, wood with a stem diameter of one-fourth to one-half inches is best. Hardwood material will be located some distance back of the terminal ends of the branches. Hardwood cuttings may take longer to root and start growth than softwood cuttings, so it is important to place the hardwood cuttings where they can remain undisturbed. Try using hardwood cuttings on roses, grapes, pomegranate, oleander, and fig.

Another type of cutting that works for some types of indoor plants is the leaf cutting. African violet, sansevieria, jade plant and begonias can all be propagated using leaf blade cuttings. Rubber plants can be propagated using leaf bud cuttings.

Potting medium is important in getting cuttings to root. Indoors, a clay or plastic pot, six to eight inches in diameter with drainage openings in the bottom, is an ideal size. Outdoors, flat plastic trays with bottom drainage works well. The media used in the containers should be porous and sterile. Horticultural vermiculite or concrete sand are idea for this purpose. If sand is used, run tap water through it to flush salts and excess silt. After washing, let it air dry for several days in direct sunlight to reduce the incidence of diseases.

It is also important to keep cuttings at a uniform temperature. Indoors or out, place the container in an area where it will receive morning sun, and bright, indirect light the remainder of the day. Covering the containers with clear plastic will help keep humidity and temperature constant; but, make sure that the plastic does not touch the tender plants or seal off the container so that good air exchange is prevented. Lack of air may prevent the new cuttings from growing.
Stem cuttings should be taken from healthy, vigorous plants for best rooting results. Take cuttings with a sharp blade to reduce injury to the parent plant. Dip the cutting tool in rubbing alcohol or a mixture of one part bleach to nine parts water to prevent transmitting diseases from infected plant parts to healthy ones. Remove flowers and flower buds from cuttings to allow the cutting to use its energy and food for root and shoot formation rather than for fruit and seed production.

With all cuttings, it is best to remove all of the leaves from the branches, except for one or two near the growing tips. It is absolutely necessary that the new cuttings be correctly oriented in the container. This means that the portion of the stem that was closest to the roots should be placed in the potting medium and the part that was closest to the tip of the branch should be the part that points up into the air. Upside down cuttings will not grow.

An easy way to remember which end is which, especially for semi-hardwood and hardwood cuttings, is to cut the bottom end that will go into the soil straight across, while the end which will go into the air, can be cut at an angle. That way, there will be less chance for error.

Before making the cuttings, fill the container with the vermiculite or sand and water it thoroughly. Prepare the cuttings and use a blunt knife to make openings in the rooting media. These prepared openings will prevent any possibility of breaking the cuttings when inserting them into the media. Stem cuttings root best when they have been dipped in a rooting hormone powder before inserting into the medium. Stem cuttings should be placed at least two inches into the soil mix.

Leaf cuttings should be set in the medium so that only the petiole and a portion of the leaf blade is buried. The Sansevieria is an exception in that the long, slender leaves should be cut into four inch lengths and placed bottom end down into the medium about two inches, similar to the stem cuttings.

Water the cuttings once or twice each day after they have been placed in the rooting medium. Apply sufficient water so a small amount drains out at each watering.

Each plant requires a specific time period to initiate roots; some will form roots in three weeks and others will take longer. After a period of four or five weeks, gently remove a cutting from the container and examine it for presence of roots. If the cutting has four or five roots, it can be removed and planted in a container with a good soil mix. If roots are not present, place the cutting back into the original pot.

Rooted cuttings should be placed in an area without drafts or other drastic changes in climate. They should receive morning sun and shade in the afternoon. After all signs of wilting have disappeared, they can be exposed to more sun if they are of the type which can tolerate full sun. House plants do not need this conditioning.

Indoors or out, propagating new plants through cuttings can be a fun hobby and an opportunity to obtain new plants for gardens and landscapes.
Now that we are entering into what I think is the best time of the year to plant trees, it is important for anyone contemplating a new addition to make sure that it is planted in the correct place.

While there are many reasons to put a plant in a certain location, there are also many reasons to not plant a tree in a particular place. Yes, shade, esthetics, architectural value, screening, and many other criteria are important, but if the plant will not thrive, or begins to offend in that location, the decision can become a costly and frustrating mistake.

Trees, shrubs, and bedding plants provide many benefits to a residential landscape, including beauty, shade, and a welcoming feel to outdoor living areas. A handsome, functional landscape also adds value to the home and can put extra money in the pocket when the home is sold later on. In order to maximize these benefits, it is important to properly plan, install and care for the landscape.

Unfortunately, far too many mistakes are made at planting. In horticultural terms, it is a mistake to plant a tree where soil or environmental conditions will not favor good growth, where it will eventually need regular and heavy corrective pruning or where it may need to be completely removed within a few years.

Heavy corrective pruning destroys the natural form and beauty of the tree and opens it up to possible infection by plant disease organisms and insect pests. Removing and replacing a tree results in the loss of the plant’s immediate value. It also means a loss of the valuable time required to bring the tree to maturity. By taking the time to do the project right the first time, the owner or manager of a valuable landscape can save both time and money.

Let’s review ten common signs that a tree has been planted in the wrong place. We have spoken about them before, but if you are getting ready to install a landscape tree, it is important to remember these warning signs. Where should you begin? A good first step would be to take a drive or walk into any residential or commercial area and learn to recognize these mistakes. Then, as you plan your landscape, make sure that they do not show up in your yard.

**Sign number one**: the tree is growing into a power line. Tree limbs growing into electrical lines strung from power poles can be dangerous hazards to people and property. Maintenance crews regularly trim out branches that grow into and around these lines. Trees that have been trimmed for safety often have their natural form, and their value, either seriously damaged or destroyed. Many times these trees end up being removed completely. When siting a tree, place it in a location where it will can grow in its natural form without danger of growing into power lines.

**Sign number two**: the tree branches grow into the street. Planting a tree too close to the street will cause the tree eventually to spread its branches into a place where bicycle, car and truck traffic will either hit, or swerve around, the branches. In either case, the tree becomes a safety hazard that will need to be severely pruned or removed.

**Sign number three**: the tree limbs and branches grow over the fence into the neighbor’s yard. If the neighbor doesn’t mind the tree or the shade that the tree provides, this may not be a problem. More frequently than not, however, the people next door would prefer that a tree not invade their property. The hassles, problems and potential conflicts that could occur are easily avoided by planting the tree in a location where it will not cross property boundaries.

**Sign number four**: the tree branches rub on the exterior walls or the roof of the house. Branches blowing too and fro in the wind can scrape and damage brick, paneled or stucco walls. They can also rip shingles and break tiles on the roof. Plant the tree away from the home to avoid expensive repairs.

**Ten Signs That A Tree Is Planted In Wrong Place**

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**Sign number five:** the trees grow into each other. Trees planted too close together compete for water, air, nutrients and sunlight. A lack of proper nutrition or sunlight will often stunt plants and weaken their trunks and branches. Branches that cross and rub against each other can easily be damaged and ruined.

**Sign number six:** the tree is damaging water, sewer or natural gas lines. Some trees can be quite aggressive in damaging and then invading underground utility lines. Depending upon the type of line, the damage can range from a mere frustration to one of real danger. It is important to know where the lines are on the property, and then to avoid them.

**Sign number seven:** the trees shade out lawns and flower beds and make them unproductive. Dense shade from large trees will often prevent lawn grasses, bedding plants, shrubs, vines and other trees from properly growing as they shade out their smaller competitors.

**Sign number eight:** the tree is in a place where it can heave and buckle sidewalks and fences. The roots of large trees, if they grow too close to the surface of the soil, can push up sidewalks and fences. This type of structural damage can be difficult, as well as expensive, to repair.

**Sign number nine:** a caliche layer or structural hard spot in the soil causes the roots of trees to grow up close to the surface of the soil. Shallow, improperly rooted trees can more easily blow over in a windstorm. This problem can be avoided by checking the percolation of water through the soil prior to planting and by properly preparing the planting hole.

**Sign number ten:** the tree cannot be properly irrigated in a timely manner because water on the property is unavailable or is too expensive for the budget of the person paying the water bill. Trees will become seriously damaged, or even die, if they do not receive the proper amount of water during the growing season.

If you have questions about this newsletter, have any plant related problems, or wish to have a publication sent to you, please call (520) 836-5221 x204 or (520) 374-6263 and leave a message. If you have a plant problem and are able to email a picture, please send a picture with any information you can provide about the plant, and your contact information to our diagnostic team at macmastergardener@gmail.com and a Master Gardener will contact you.

This newsletter is available to view on our website at: [http://extension.arizona.edu/pinal](http://extension.arizona.edu/pinal)

Richard D. Gibson  
Extension Agent, Agriculture

RDG/te/sh/aw

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Have a sick plant or just questions about caring for your plants?

Visit our Plant Diagnosis Clinic held every third Thursday of month from 9:00 to noon at the U of A Cooperative Extension 820 E. Cottonwood Lane, Bldg. C Casa Grande, AZ 85122

Or you may call the Maricopa Agricultural Center at (520) 374-6263 and leave a message. If you are able to email a picture, please send it with any information you can provide about the plant, and your contact information to the diagnostic team at macmastergardener@gmail.com and a Master Gardener will contact you.

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