ASPARAGUS AND ARTICHOKES

Both asparagus and artichokes are delicious, perennial vegetables that can easily be grown in Southern Arizona gardens.

The major problem to achieving a good quality harvest of these vegetables is patience on our part. Because they are both more or less permanent crops, it takes some time for them to develop strength and store energy to support the development of the edible parts. All plants for good health require stored energy balanced between the top of the plant and the root system. For this reason, it is recommended that neither plant be harvested the first season after planting. If we can be patient until the plant develops the strength to produce adequately, both crops will give years of good service. Once established, artichokes will produce heavily for three or more years and asparagus for ten to fifteen years.

The artichoke plot should be planned carefully, as these plants are deep-rooted perennials that are difficult to transplant. Any mistakes made at planting are difficult to correct. Some choose to plant artichokes in large containers which helps keep the plants to a manageable size and helps avoid the challenges of difficult soils. At maturity, artichokes are three to four feet high and about four feet in diameter, with deeply lobed blue-green foliage. Three or four plants will produce enough artichoke flower buds, the edible portion, for a family of four.

For artichokes, choose a location that is more or less protected from harsh winds, and receives full sun and afternoon shade in the hottest months. Loosen the soil and work it well to a depth of twenty-four inches. In our hard desert soils, it may be necessary to double dig, that is, spade to twice the depth of the shovel blade.

Double digging is a procedure that is commonly used to loosen and reclaim our hard, compacted desert soils. To double dig, first shovel out and pile to one side the first shovel length of soil over the entire length and width of the garden plot. Next, spade and turn over the layer of soil at the bottom of the hole. After spading and loosening the soil at that depth, add a good supply of decomposed organic matter, like compost, animal manure or leaf litter and spade that into the ground. Finally, replace the top layer of soil that has been set aside and be sure to mix organic matter into this level as well. The resulting garden bed will have been tilled to double the regular depth.

Plant dormant artichoke roots, if available, in mid-winter. Seedlings may be transplanted in late winter or early spring. They should be spaced four to six feet apart to allow for vigorous growth. Larger container plants can be placed into the soil later into the season.

ASPARAGUS AND ARTICHOKES ... CONTINUED ON PAGE 2
**Asparagus and Artichokes ... continued from page 1**

Seedlings require deep, regular watering. Once the plants are established, however, they will actually tolerate a certain amount of drought. In the hottest months of the summer, artichokes in low elevation gardens will more or less rest as they store energy in their roots. With the rains of late summer, vigorous growth will resume.

Fertilize artichokes after the harvest period is over to help restore vigor. Gardeners in cooler areas may benefit from fertilizing in the early spring as well to induce new growth. Regular additions of rich compost throughout the growing season will also aid rapid growth and bud production.

To harvest artichokes, allow the buds to form, but not open. The first bud produced is the biggest, but smaller ones will appear on side shoots. Prompt action is best, as flower production suppresses or completely stops the development of new shoots and flower buds.

Asparagus will thrive almost anywhere in the United States. Completely cold-hardy and heat-tolerant, asparagus grows vigorously in full sun and seems to prefer slightly sandy soils. It will not tolerate acidic or poorly drained conditions.

Again, both the planting and the harvesting of this vegetable require some patience. The waiting is paid off in both beautiful foliage and abundant spears that are much fresher than those found in grocery stores. Plan on growing ten or twelve plants per asparagus-eating member of the family. Bare “root crowns” for propagation are generally available between January and March.

To plant asparagus, choose a fairly large area that gets full sun. Dig a trench one foot wide and eight to ten inches deep. Allow two feet between trenches if multiple rows are planned. Amend the soil that has been removed from the trench with one fourth to one half rich compost or other organic matter. Work two to four inches of the enriched soil into the bottom of the trench and soak the soil with water. Into this layer, plant the asparagus root crowns twelve inches apart and two inches deep, spreading the roots out carefully to avoid crimping or crowding. Keep the soil moist and be patient. In about a month, slender shoots will appear. As these shoots grow, fill in the soil around them until gradually the trench is filled. Don’t cover the tips of the young asparagus shoots.

As the asparagus plants continue to grow, they will send back food resources for storage in the below ground portions of the plant. This should be encouraged for the first year at least, as the plant grows in strength. Harvest only the larger spears for the first few years. Your patience will be rewarded with many large spears over the entire life of the plant. Otherwise, the plant will forever be doomed to producing only small, fragile spears.

Asparagus is a heavy nitrogen feeder and should be regularly fertilized during heavy growth periods. Apply a nitrogen fertilizer early in the spring and continue light applications during the growing season. It will also be important to fertilize again when the harvest is over. The additions of compost or rich organic matter throughout the season will also result in healthy plants.

If you like artichoke buds or asparagus spears fresh from the garden, consider planting some of these interesting and tasty vegetables.
For those who crave the taste and texture of a vine-ripe tomato, the planting and growing of tomatoes is serious business. The desert environment, however, is harsh on tomatoes and the outcome of local crops is anything but certain. Here are a few tips to make sure that the vine ripe craving is satisfied.

First, why is it so difficult to grow a decent tomato in southern Arizona? This is an oft asked question and the answer is somewhat complicated. However, consider this. Look around Pinal County anywhere for a commercial field of tomatoes, either for fresh market or for canning purposes. I will save you the trip. There aren’t any.

The reason for this is because the environmental conditions here do not make tomato production a viable choice for making money. In reality, the heat and salinity of this area makes tomato production risky, if not impossible. There are greenhouse operations scattered here and there around the state, but no field-grown crops. This fact tells us that we have to be on our toes if we hope to beat Mother Nature.

Now home gardeners can, and do, make allowances for these conditions by performing a few simple tasks that are feasible on a small scale but economically unviable on a larger, commercial scale. If these simple tasks are not done, though, the chance of a satisfactory harvest are greatly diminished.

Okay, so what do we have to do? The most serious problem in growing tomatoes in the desert is the heat. Most tomato varieties cease flowering when the temperatures rise above 90 to 100 °F. If they do flower, the fruit does not set. The most common condition reported by home gardeners is the presence of a large, vigorous, healthy vine, but without fruit.

The reason that the vines look healthy but do not have fruit generally is the abortion or loss of flowers from the vine. Flowers abort by forming an abscission layer just below the blossom which first crooks, then falls off with a single touch or breath of air. Tomatoes planted too late in the spring or varieties unadapted to our area will display this symptom through the hot summer months, occasionally putting out a crop after the temperatures begin to come down in the fall. The solution is to plant early, February or March. Most serious tomato gardeners have already planted and are pushing their vines with water and nutrients. However, even at this late date in March, it is not too late to plant. If you are going to do it, though, do not delay.

The spring growing season can be lengthened by providing shade to the plants when the temperatures start to go over 90° F. A cloth shade, such as burlap or cotton sheeting, spread over the plants to provide shade will often allow the plants to live a little longer into the summer. With luck the plants might be able to go through the hot season and begin to produce a second crop in the fall.

Another secret is the choice of varieties. Many of the varieties that are mainstays in other parts of the country simply do not do well here. “Beefsteak”, “Better Boy” and other large-fruited varieties will almost always produce large, healthy vines early in the season but tend to abort all fruit until the late summer and fall. Small-fruited varieties include “Cherry” and “Yellow Bell” and medium-sized fruit like “Celebrity”, “Early Girl”, “Columbia” have a much better track record of producing good crops early before the summer woes begin.

-- Growing Tomatoes in Pinal County --

CONTINUED ON PAGE 4
In making these variety recommendations, I know someone will remember that they themselves did indeed harvest a great crop with one of the vilified varieties. I do not question that any variety under certain circumstance cannot produce a quality crop. I am just saying that year in and year out, certain varieties seem to do consistently better than others. Choose a variety that matches your needs, your growing conditions and your experience; but for consistent yields every year, the bottom line is this: use recommended varieties.

Next, look at your irrigation and fertilizing procedures. Over-wet soils can cause the flower buds to drop off even before they bloom. This is also aggravated by the warm-day, cool-night extremes of the southern Arizona spring season. Nutrition is key so carefully manage the amount of nutrients in the soil by making sure that the plants are fed regularly with light applications of a nitrogen based fertilize; not too much and not too little will be best. Also, temperatures below 50° F. or above 95° F. handicap pollination and fruit set. The best temperature range for happy tomatoes is between 70 and 80° F.

Pollination early on can be enhanced by physically moving the pollen within the flower by gently tapping the flowers with a finger tip or a small stick. The gentle vibration of a mechanical toothbrush also works well. These actions dislodge and distribute the pollen within the flower. Fruit-setting hormone sprays are also available and work well in the early season, but are less effective during the summer months.

Summer time is tough on tomatoes in this area. Whitefly, red spider mite, and russet tomato mite infestations along with salt toxicity and other problems enhanced by the heat make it difficult to carry tomatoes through the summer season. One trick for rejuvenating old vines is to prune the vines back heavily in mid August to stimulate new growth for the fall season.

Finally, while mid to late February is the traditional time to plant tomatoes for a spring crop, those who are really determined to have a year-round supply of garden fresh tomatoes might try an early September planting for a fall harvest and cover them every night that temperatures dip below 50° F. Given good luck and a green thumb, the plants may bloom through the winter and into the next spring providing a continuous and abundant supply of vine-ripe, tasty tomatoes.

Trade names used in this publication are for identification only and do not imply endorsement of products named or criticism of similar products not mentioned.
**Caring For Citrus**

By now most citrus trees in the area have set a healthy supply of newly developing fruit that later in the season should bring a tasty treat to all who love a good tasting sweet orange or tart lemon. If you have a tree of bearing age, check the tips of the branches. You should be able to find the little fruit, smaller than marbles, that soon will turn into the fruit we love to eat.

There are two really important tasks required by all citrus trees to help ensure a bounteous harvest. The first is timely irrigation and the second is good nutrition. There is no major pruning required to maintain fruit productivity nor are there any major insect pests or disease problems to worry about. Oh, there are a few but they are relatively minor. Let’s visit about some of the key management tasks required to produce good citrus every year.

Citrus need moderate watering, especially during the hot summer months when the trees are using water as fast as they can pick it up. Established citrus trees need to be watered every 7 to 10 days during June, the hottest and driest month. If the monsoons are late and the high temperatures persist, it may be necessary to drop the irrigation frequency down to once every 5 days. During winter, it may not be necessary to irrigate more than one time per month. No matter whether you are using a hose to fill a basin or a drip irrigation system, make sure that the entire area under the canopy of the tree is moistened. Trees should have water available throughout the complete root system, every irrigation, every time. For full-sized trees, this is usually about three feet deep and out at least to the outside edge of the tree canopy.

When irrigating trees, either by flood irrigation or by drip irrigation, it is important to make sure that salts in the soil and in the water never exceed concentrations that would damage plant tissue. Burning or drying of leaf tips and margins is a typical symptom of salt burn and can seriously injure the tree. Make sure that the entire area underneath the tree from the trunk out to the last twigs is carefully watered and apply extra water to the surface of the soil occasionally to leach salts out of the root zone of the plant. This will reduce the salinity hazard to the tree.

Citrus also require nitrogen fertilizer at regular intervals during the year. About 5 pounds of 21-0-0, ammonium sulfate, or 6 pounds of 16-20-0, ammonium phosphate, are required by each full-sized, mature tree each year. The total amount should be spread out over the entire year in at least 3 to 4 applications. Do not apply the entire amount all at the same time. You will burn the roots.

A good fertilization schedule would be to apply one third of the total in February just before flowering, one third in May as the fruit begins to grow and one third in August as the fruit finishes out. It is this last application which is the most important because during that period the fruit buds for the next year’s crop begin to form.

Over application of fertilizer, or failing to cut back the recommendation on smaller trees, can burn the tender roots that pick up water and nutrients from the soil, possibly leading to serious plant injury.

With the weather quickly warming, it is almost too late to plant a new tree but if you just have to put one in the ground this spring, and are willing to baby it through the hot months of May, June, and July, then go ahead a try. The hot weather, if the tree roots are not kept adequately irrigated through this most difficult of seasons, could suck the moisture and the life right out of young trees.

Oranges, grapefruit and lemons are the most commonly planted citrus in our area, but be aware that there is a wide variety of other types of citrus from which to choose. The diversity of different forms gives the gardener the opportunity to personalize the landscape and share exciting, mostly unknown fruit with neighbors. Tangerines, blood oranges, pummelos, kumquats, mandarins, and an array of hybrids all do well in this climate and might just be the answer for that one, special spot.

_Caring For Citrus . . . Continued on Page 6_
If there is enough space for several trees, it is possible to harvest citrus just about year round. The earliest varieties of mandarins start ripening around mid-October with each species and variety of citrus following in their normal seasons until the last Valencia oranges fall from the trees the following September. For most, there simply will not be enough room to plant a large orchard. However, it is still possible to mix and match a few varieties to space out a citrus harvest off and on throughout the year.

Selection of varieties should also include a consideration of available space. Often trees are planted too close to buildings or fences cutting yield and creating problems with building maintenance and neighbors. These kinds of problems can be avoided by selecting smaller growing varieties or by selecting dwarf plants for those tight areas.

A good example of a smaller sized tree is the Marrs orange. The Marrs has a tree diameter of about 12 feet at maturity as compared with 20 to 24 foot diameters for full-sized trees. At maturity, the Marrs reaches only 6 to 7 feet tall, making it easy to pick fruit from the top of the tree. The quality of the sweet fruit is excellent, some preferring it over other orange varieties.

For container gardening or in cramped areas, consider planting dwarf citrus. Since there are very few true dwarf citrus varieties, most of the dwarf citrus being sold are small by reason of being grafted onto the Flying Dragon rootstock. This rootstock severely limits the growth of any variety budded to it. The down side of dwarf citrus is that they are generally slower growing than full-sized trees and they never really become strong fruit producers, but the ability to produce tasty fruit in a cramped area often makes up in satisfaction what is lost in volume.

Fortunately, there are very few serious insect pests and disease ailments that bother citrus in our area. The orange dog caterpillar, the larval stage of a beautiful monarch butterfly, feeds on the leaves but they rarely do enough damage to warrant control measures. On small trees, where multiple insects might destroy many leaves, the larvae can simply be picked off by hand and destroyed at will. The larvae are brown and white splotched caterpillars which look very similar to bird droppings on the leaf. Most people just leave them alone so that they can enjoy the butterflies later on.

Citrus thrips, a small, tan, cigar-shaped insect, does scar the outside of leaves and fruit, sometimes with dramatic effects, but they do not harm the interior of fruit nor cause long term harm to the tree. Since no effective controls exist for thrips in the home garden, these insects can be ignored.

With proper care, the many varieties of citrus available to the home gardener in southern Arizona will add diversity, color, and a different texture to the landscape for many years. The secret to successful citrus production really lies in how well each tree is provided the right care at the right time. An understanding of what the trees need at a given period of time coupled with good attention to detail should keep both trees and owners happy for years to come.
Soil compaction offers challenges to plants.

Soil compaction is a major reason that some trees and shrubs struggle to survive in the desert regions of Arizona.

Soil compaction offers challenges to plants. The most common symptoms of compacted soils are stunted, slow-growing plants. In trees, I look for plants that have a thin canopy of leaves with twigs at the tips of branches that are either without leaves or have died back. If I see shrubs that just sit there and look at you with little or no growth, I look to the soil for the underlying problem.

Those knowledgeable in the ways of plants will say back to me, “Rick, those are symptoms of water stress!” I would quickly agree but at the same time I invite you to think about why that plant might be so stressed. Providing that the watering schedule is correct, and that the water system is delivering water in the right way, a plant with drought symptoms might just be at the mercy of a compacted soil that does not allow water penetration sufficient to nourish existing roots or support the growth of new roots. Both conditions can mean eventual death to a plant.

There are many other reasons that plants fail to thrive here in the desert, of course. Climate, variety selection, irrigation problems, insects and diseases all can account for their share of landscape plant failures but more often than not, soil compaction plays a fairly significant role plant health and vigor.

Soil compaction can take many forms. The first is simple physical compaction and it is always a possibility in desert soils. Physical compaction occurs when individual soil particles are jammed down together in a tight formation that slows water and air entry into the air and makes it hard for plant roots to push down into the soil. Think about the soil underneath a playground swing or a base path in a softball field.

Another type of compaction is chemical compaction. This occurs when a specific soil chemistry problem is the culprit and the most common example is caliche.

Calcium carbonate, sometime called caliche, accumulates as an evaporative residue and is often found in desert soils. Dissolved into water, the chemicals are constantly in motion with the water until it evaporates and leaves behind the now solidified solid remains. Calcium carbonate is lime, a basic component of cement and can be very hard for shovels and roots to penetrate. If you have ever tried to dig through it, you will know what I mean. Caliche can be found in the soil as small crumbs, thick or thin lenses, or solid sheets. It is grey in color and it is hard, very hard.

A third type of compaction is a form that is directly due to a combination of both physical and chemical factors and is best illustrated by what we commonly call alkali or sodic soils. Sodic soils are soils that are saturated with the element sodium. Sodium causes the soil particles to separate out from each other and act independently. When this occurs, gravity and mechanical traffic can cause the soil particles to collapse in on themselves and form a compacted layer.

Soils saturated with sodium take on unique characteristics. Because the alkali salt causes the soil particles to separate and act individually, the soil particles with the least disturbance can easily billow up into the air and create clouds of dust. Water often sits on the surface of these soils without sinking in until it evaporates. Sometimes the water will penetrate less than an inch into the soil. The soil also becomes quite sticky and readily clings to shoes, hands and clothing.

So, how do we know if we have soil compaction problems in our yards? There are some simple tests that anyone can do at home without having to be a soils expert or purchase a lot of expensive gadgets or materials.

The first test is simply to dig a hole. Using a pick and shovel, excavate out a shallow hole right where you are thinking about planting a tree or shrub, or if the plant is already in place, off to the side a ways. The hole should be about one foot deep and as wide as you feel will give you a good reading.

The next step is to fill the hole with water and then time how long it takes for the water to sink into the ground, that is, to disappear. Most soils should drain within thirty minutes to two hours. Some soils with higher levels of clay might take longer. Suspect caliche, sodium or physical compaction problems if it takes longer than say, six hours. Do not plant...
anything at that site until you figure out and fix the problem. Drainage problems are a major cause of tree death in our area.

Another test is to test how deep your water is sinking into the soil after an irrigation. I like to use a long screwdriver as a soil probe. I simply run my probe into the soil as a measure of how deep the water penetrates the soil during an irrigation. Where the soil is moist, the screwdriver will slip easily into the ground. When it hits dry soil, it will stop abruptly. With the probe in the ground, place your fingers at the soil level and remove the probe. Measure the distance between your fingers and the tip of the probe. If the water is only sinking down a few inches or perhaps pools on the surface of the soil, you may have a compaction problem, such as caliche or sodium.

Lose a shoe? If you have a soil that resists water penetration and tends to pull the shoe off of your foot when you walk on it, think sodium. It is probably a good idea to treat the soil with an application of gypsum.

Watch for the fizz. Caliche is known to have a basic pH, that is, a pH well over the neutral point of 7 on the pH scale. Because of this, any acid coming in contact with the mineral will cause the caliche to bubble and fizz. Soil scientists use a drop of concentrated acid, like hydrochloric acid, placed onto soil sample to tell quickly and accurately whether caliche is present.

I personally do not like to carry concentrated acids around with me because of the danger of caustic burns, so I use mild acids like vinegar, lemon or lime juice. Because they are not strong acids, I have to look carefully to see the fizzing action.

Once that you have a pretty good idea of what you are dealing with, it is time to fix the problem. A physical compaction layer can be solved simply by drilling holes down through the compaction layer and backfilling the holes with sand. Many home gardeners like to use water pressure to do the work for them so they attach a root feeder or a piece of piping to the end of their hose. Others will attach an augur bit, one-half inch is good, to their portable drill. Whichever way, they drill as many holes into the ground that they have time and energy to do. This tends to loosen the soil and allow water and air to better penetrate the soil.

Caliche layers can be solved by digging them out, punching a chimney down through them to a more receptive soil layer or building raised bed gardens over the top. Gypsum, as an amendment, is the solution for sodium problems.

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.

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