



THE UNIVERSITY OF ARIZONA

Cooperative Extension

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### CREATING AND USING MICROCLIMATES IN THE LANDSCAPE

Some landscape and garden plants are just too sensitive to grow in your yard without making use of a microclimate.

When it comes to gardening in the desert, it is important to know the two basic climates that influence your plants. The one that we know best, and that affects our plants the most, is the macro climate. We know it best because we live in it day in and day out. This climate, as its name suggests, is the general climate that surrounds us every day.

You know the drill very well. We walk outside the door in the middle of summer, feel the heat and the dryness of the air, and immediately we are reminded that we live in a desert. Characterized by high temperatures and a shortage of rain, our desert climate is something that we often like to share with others on social media! "Let me tell you about the day it was 120 degrees in the shade!" You know, that kind of stuff.

The macro climate absolutely plays a huge role in determining the types of plants we can grow. Tender plants like leafy vegetables, eggplant, and tomatoes have definite planting windows determined by the climate. Climate also makes the decision as to what kinds of trees or shrubs we can plant in our yards. I am sure that you can think of several examples of this.

Here are two.

A blue spruce tree grows very well in the high mountains of Arizona but would never survive the climate of our low deserts. It just won't. Similarly, our native mesquite cannot endure a mountain climate. For these and other reasons, the large-scale climate of a particular region plays a key role in determining what we can plant with any hope of success.

The other type of climate that can work for us, or against us, is the microclimate. A microclimate, as its name implies, covers a much, much smaller area than the macro climate. It could be just a few square feet in size, but the overall effect on plant well being can be huge.

A microclimate is a spot where the overall effects of the macro climate are modified, dampened, enhanced, or exaggerated in some way. A microclimate could be created where the dryness of the desert air is blunted by close proximity to a water feature, or influenced by a mister system outside our homes.

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## **CREATING AND USING MICROCLIMATES IN THE LANDSCAPE ... CONTINUED FROM PAGE 1**

A microclimate could be created near a building or under a tree where the harsh temperatures of the summer are moderated slightly and just enough to allow a tender plant to survive. A microclimate could be created in a sheltered area under a porch or next to large boulders of rock that might provide a little warmth during the winter. Such a microclimate could allow frost-tender plants to escape freeze or frost damage during a cold winter night.

You have probably seen evidence of microclimates, perhaps without even noticing them. For example, when you drive to Payson next time, and just before topping out of that long hill this side of Sunflower, look off to the right and see a saguaro growing right next to a juniper. The juniper is a medium elevation plant that likes cooler temperatures, way cooler than what a saguaro can tolerate. Still, the saguaro is able to survive in that location because it is snuggled up to a large rock that captures heat during the day and reflects it back at night to create a microclimate that benefits the saguaro.

As you start looking, you will start picking these microclimates out yourself. They are everywhere, not only in the wild, but also in our yards. By studying the good points and the bad about a particular microclimate, we can begin to figure out how to either make use of them to our benefit, or avoid the danger that they could present to our plants. Let me throw out some examples.

Have you ever noticed a lemon tree thriving in a spot between two buildings. Exposed to freezing weather, a lemon often will be damaged from an inevitable cold snap. At times the cold will knock the leaves from the plant. Sometimes the damage is much worse. Growing in a temperature-protected area, it does very well in that little microclimate.

Let's say I want to grow a hibiscus in my yard because of the spectacular beauty of the flowers and the deep green of the foliage. I know that the hibiscus is a plant that does not like the extra heat of a summer day, nor does it like the cold chill of a freezing night. The solution that many have found is to plant them in containers, especially in large containers on wheels. The artificial soil of the container helps modify the effects of salinity, yes, I agree, but even more important is the flexibility that allows the plant to be moved from one place to another according to the temperature. It can even be moved indoors if necessary. By moving the plant into and out of shady areas, and away from extreme temperatures, the plant can survive in a microclimate where, when stationary in the soil, it might not survive.

Tomatoes are notorious for sun scalding in the late afternoon summer sun. To counteract this kind of problem, many tomato aficionados will plant their tomatoes in a garden bed on the east side of the house where they will be shaded during the hottest times of the day. Alternatively, other growers create a similar microclimate by setting up shade cloth screens over their tomato plants to protect them from the hot and intense summer sun. This ensures that the plants get enough sunlight to grow and produce, but at the same time have a more welcoming environment underneath the canopy.

A microclimate can negatively affect plant health also. Let's say a gardener places a heat-sensitive plant next to a south-facing concrete block wall. The extra heat gained from exposure to the sun radiates back from the wall into the environment of the plant. The resulting extra heat can burn the leaves and other tender tissues of the plant. The owner wonders, "What happened to the plant?" It was the negative effects of a microclimate that did the deed.

To identify the microclimates in your yard, or to make a plan to create them, walk around and take a critical look at your property. Look for protected areas next to buildings, shaded areas under trees, and the exposure of the various hard surfaces, like concrete sidewalks, fences, and driveways that will collect heat during the day and then share it with your plants at night. As you analyze the characteristics of your yards, including its microclimates, you should be able to figure out the potential for experiencing the good and the bad that comes from gardening with microclimates. Then, create a plan to turn that spot into the perfect home for that tender plant you want to grow.

Microclimates can often mean the difference between success and failure in the garden. By understanding the various types of microclimates and how to use them, you just might be able to help that tender plant survive.

## USING ACCENT PLANTS IN THE LANDSCAPE

Understanding just what an accent plant is, and how they are best used, can help you bring eye-catching beauty to your yard.

There are many different types of plants that can be used as accent plants in the landscape. In general, each of them have a united three-part goal or purpose: 1) capture attention, 2) bring focus to an otherwise bland landscape view, and 3) help create a garden theme. Plants that fulfill these assignments are generally called accent plants.

Accent plants can accomplish their mission in several different ways. In some instances, it can be through color. A plant with fiery red or cool blue flowers, such as the red bird of paradise or the blue hibiscus, can draw the attention of passers-by and serve as the focal point of the garden. Other colors, blending well with the plants around it, can also serve this purpose.

A great example of color in an accent plant is the bougainvillea. In full bloom it almost automatically commands attention because of its vibrant colors, even if it is planted all by itself in a landscape. Incorporated with other plants into a corner niche garden, it can be particularly eye-catching.

The success of an accent plant can also be tied to the shape of the plant or its parts. Some plants may appear quite colorless, all the time or between blooms, but the shape of the plant, even it is just the leaves, can be quite spectacular. Many indoor plants are that way. What attracts the gaze is the unique shape of the plant. They tend to command our attention. Outdoors, some plant sculpture experts carve forms or faces into plants to draw the eye.

Another great example of this concept is our old friend, the saguaro. Its unusual shape makes it the ideal standard bearer plant of the Sonoran Desert and our landscapes that try to mimic the wild almost always have one included. People all over the world associate the saguaro with the Southwest. For this and other reasons, it always seems to attract attention, no matter where it is growing. Other cacti planted in a landscape often serve the same purpose.

Plant size can also create an accent plant. Because of their size, a Mediterranean or Mexican fan palm, either one, can attract the gaze. We see it all the time. Planted in a grass lawn or graveled yard, a large palm tree is the landscape's focal point. Surrounded by other complementary plants with a tropical look, a palm can quickly give a yard a totally different feel that is separate and apart from the normal desert landscape.

As you take a walk around your neighborhood, or any area for that matter, take time to look at the various landscapes planted around homes or in business areas. Ask yourself several questions as you pause to look at each one.

"What plant in this garden first attracts my attention?" "Which plant here tells me the overall theme of the garden or yard?" "When I look at the yard and I am drawn to that first plant, is it the color, size, or shape that catches my attention?" These and other questions can help identify the accent plant in any landscape.

Let's turn our attention towards the process used to select an accent plant, and then visit briefly about how to design a yard, or section of yard, around that accent plant. It takes a little knowledge of the plant palette, or the range of plants from which we can select, and a knowledge of some basic landscape design principles in order to do this. Let's review those briefly.

First of all, before considering any plant at the nursery, you have to decide on a theme for the landscape, even if it is just a small section of the yard. What mood or feel would you like to project? Common themes locally usually revolve around four basic landscape types. Each provides a different perception or "feel" to an area of the yard.

The four common themes include, 1) the Sonoran Desert theme, 2) the Southwestern desert theme, 3) the tropical Mexico theme, and 4) the Mediterranean theme. We have reviewed those previously in this space so I will not belabor them here. However, I invite you to imagine in your mind the differences between the four styles by thinking

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about the various plants that grow in each of those geographic areas. If you would like to learn more about these themes, and the plants normally associated with them, we have a free bulletin here in the office that we would be pleased to share.

Now, hold on just a second. This next point is important. When you start assembling a plant list, and deciding where to place each one, remember to be careful about mixing non-complementary plants from two different themes in the same area. In other words, don't stick a saguaro from the Sonoran Desert theme next to a citrus tree which is more of a Mediterranean type of plant. Not only do they require different amounts of water, which will make them hard to irrigate correctly, but they just do not belong together in the same view. Why is that?

There are many reasons, of course. One reason is that they come from different parts of the world. You never see a citrus tree growing wild out in the desert next to a saguaro. It just never happens because each are native to a totally different climate and area of the world. Putting them together is just weird.

Perhaps the most important reason why they are not complementary and should not be placed together however is due to a general landscaping rule: Never place two accent plants close together. Both citrus and saguaros, because of their size, shape, and color, can be accent plants. Placing them both together in the same area creates visual confusion. When we look at two non-complementary accent plants in the same view, our gaze keeps jumping back and forth between the two, and that creates confusion in the mind. Plants should help each other create a mood instead of clashing with each other.

Finally, when designing your garden, remember to provide a backdrop for your accent plants. Select companion plants that will help highlight the best qualities of the accent plant and not hide them. That backdrop could be made of many plants, just a few, or perhaps no plants in its general vicinity. An accent plant may also be able to do its job when it is backed by a wall or some other structure. In designing the landscape, just remember to place your accent plants in a location where they can be seen to their best advantage.

By choosing the right type of accent plant for each major location in your yard, an otherwise drab view can be turned into an attractive and eye-catching show that will bring long term value to the landscape.

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## TIPS FOR GROWING SUCCULENTS

Many people enjoy gardening with succulents not only because they are adapted to our climate, but also because they look good in the garden.

A succulent plant is one that has the capacity to store sufficient water within its leaves, stems, and, in some plants, the roots to carry it through most dry periods. Because this ability to store water helps desert-adapted succulents survive in arid environments, succulents make good choices for outdoor gardens and landscapes. Some of them even do well indoors.

Cacti are a type of succulent because they store water in their tissues, but it is important to remember that not all succulents are cacti. Included within the succulents are many other types of plants, including the agaves, the aloes, the euphorbia, and a bunch more. The large number of different types of plants among the succulents allows diversity, interest, and horticultural opportunity for gardeners.

Now, do not let me mislead you here. Not all succulents are easy to grow so you have to know what plant you have and the key specific tasks that need to be done to take care of it. Still, many succulents are relatively simple to manage and these can be a good way to enjoy a garden in desert.

If you are interested in succulents and want to know more, what should you do first? The first step is to find a good resource that deals with succulents. There are a number of good references available and most succulent plant growers have their own favorites. In addition to a good reference, it is also helpful to have someone knowledgeable to whom you can turn for answers. For tips and the “how to” here locally, I turn to BJ.

Perhaps you know BJ. She is one of many valued Master Gardener volunteers here in Pinal County that provide many hours of garden and landscape assistance each year. You may have met her at the plant clinic, either in Casa Grande or Maricopa, where she loves to answer questions, especially about growing cacti and succulents. Her backyard is filled with them and she posts updates about her plants regularly on social media. If anyone has questions about succulents, BJ is a good place to start!

I recently invited BJ to share with me her most important tips for growing succulents. She graciously agreed and I am pleased to pass along some of her secrets.

She started off explaining that she has two firm rules that she follows. The first rule is to know the plant. Since one size does not fit all, it is important to know the plant and the family to which it belongs. She then studies the characteristics of the individual plant. An aloe will have different needs than a cactus and trying to force one to behave like another can lead to serious problems.

Her second hard and fast rule is to know if the plant is a ‘summer grower’ or ‘winter grower’. This refers to the period of time when the plant goes into dormancy, or its resting period. If the plant wants to rest and we are forcing it to grow by giving it water and nutrients, problems can arise.

BJ says that if we follow those two rules, we should be able to manage most succulents correctly. Here are some other tips that she gave me.

Always start with a healthy plant. When you go to purchase a plant, look for one that has a full shape, good color, and healthy foliage. You do not want to bring home diseases or insects that will attack your other plants. That is just asking for trouble, so check each over carefully before purchasing. Avoid any plants with a hint of insects or signs of damage.

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It is important to give your succulent plant enough light. Some succulents can do well in shade and serve nicely as indoor plants. They can also thrive underneath an overhand or porch. Others need full sun to be successful. Some prefer filtered shade. This is where your reference comes in handy. Make sure you know your plant, rule number one, and then find out and provide the correct amount of light.

Succulents need water according to the plant's season. Some need water during the growth period only and do not need any water at all during the resting season. Again, a good reference will help greatly in deciding when and how to water. A succulent plant with leaves that pucker is a good sign that the plant is not getting enough water, BJ says. One with soggy leaves means that it has taken on too much water. It is important to set a regular watering schedule and stick to it. Succulents should be watered when the top inch of soil feels dry to the touch. It is important to pour enough water into the container so that it flows out the drainage hole at the bottom of the pot. If the plant container is sitting in a catch tray, it is important to remove all excess water from the tray to prevent salt injury to the plant.

It is important to keep the plants free of dust and grime. BJ likes to use a damp cloth to wipe down the leaves and stems of her plants, or, better yet, take them outdoors and mist them clean with a gentle spray of water.

If the plants are going to live in a container, it is essential to use the correct type of soil. Succulents like to have their roots dry so the potting soil needs to drain quickly and easily. This generally means that there needs to be upwards of fifty percent sand or similar medium in the mix. Many experienced growers use a commercial cactus mix available in stores.

Some insects can cause problems. Scale insects, mealy bugs, aphids, and spider mites can be serious pests of succulents, especially on indoor plants. Once they get started, they are pretty tough to get under control so it is important to keep a close eye out for them. Many like to use a steady stream of water or an alcohol swab to keep these pests under control, but it can be a never ending job if the populations explode. Systemic insecticides may be necessary in some situations.

Succulents should be fertilized in summer, or when they are actively growing. Some people feel that succulents do not need fertilization. That is not exactly true, especially for those growing in containers. All plants need access to nutrients to grow properly. If they cannot obtain them from their native environment then they will need to be carefully fed. Because heavy applications of nitrogen and other nutrients can burn the tender tissues of many succulents, it is best to apply nutrients at about half strength of what might normally be considered a standard application. For succulents growing in containers, a complete fertilizer, such as 8-8-8, again, applied at half strength, would be about right. To avoid injury, it is best to apply the fertilizer to the soil itself without letting it touch the leaves and stems of the plant. Do not add the fertilizer when the plants are dormant.

Finally, it is always a good idea to remove dead or decaying leaves to help keep the plants looking nice and to ward off insects. You can nip them off with a pair of sharp scissors or a set of pruning shears kept handy for the purpose.

No matter whether you are a beginner and looking for an easy care plant to go in that one spot, or whether you are one that absolutely loves to grow succulents just for their beautiful flowers or their unique, handsome appearance, it is important to do it right.

## TRAINING FRUIT TREES TO A TRELLIS

If you are short of space and want fruit trees in your yard, consider placing them on a trellis.

The espalier concept, the process of growing trees on a trellis, has many applications in the home garden. Not only does it offer intriguing horticultural benefits, but it is also easy to do. More and more people are turning to trellised fruit trees because, for them, using a trellis makes a lot of sense.

While the concept may seem strange to some, there are sound horticultural reasons for training fruit trees in this manner. First, and perhaps foremost, training a fruit tree to a trellis can help keep the branches of the tree out of the way of other activities in the yard. If you are needing a little more space, growing fruit trees on a trellis may be the answer!

In yards defined by only a few square feet, there may not be room for a lot of trees. Training trees to a trellis helps minimize the space that a tree needs to grow and fruit. In addition, a tree on a trellis, if the foliage is thick enough, can serve as a space-defining screen or hedge. Some people train the tree to provide shade over a walkway, or to create a microclimate for growing tomatoes or other tender plants that may need a little afternoon shade.

Second, training a tree to a trellis can provide flexibility to accomplish multiple purposes. Shade, screening, and other horticultural goals can be fulfilled using trees on a trellis. For example, training a tree on a trellis next to an exterior wall can help shade that wall more efficiently. Why is that? The shade from a trellised tree can be arranged to cover more of the wall area. Lowering the amount of direct sunlight touching a wall leads to lessened heat gain during the day. The end result is that the wall stays cooler.

Third, there is strong evidence that placing a fruit tree on a trellis may increase, not decrease, the number of fruit. How can a tree with a limited area of growth produce more fruit? The answer in part I believe comes from a higher efficiency of photosynthesis. When a tree is grown on a trellis, more leaves, and more of each individual leaf, are exposed to the direct light of the sun. This helps the leaves more efficiently capture the sun's energy which can be channeled into fruit production. In addition, trees on a trellis can be planted closer together without interfering with each another. This also helps increase production.

Many plants do well on a trellis. We know, of course, that vining plants prefer a trellis. For grapes, a trellis is absolutely necessary. Blackberries do better on some kind of support than when they are allowed to lay upon the ground. Tomatoes, cucumbers, watermelons, cantaloupe, and other vining plants can be trained to a trellis quite easily. To this list, we will add fruit trees. Apples, peaches, plums, pomegranates, and other deciduous fruit trees that lose their leaves in the winter can thrive on a trellis. Even citrus have been effectively trained to a trellis system.

The idea of growing fruit trees on a trellis is catching on even in agricultural systems. Fruit growers like the technique because it makes an orchard easier to feed, weed, and protect from insect pests. They like planting the trees closer together for increased yield. Harvesting is much easier. If we take a leaf out of the farmer's book, we can enjoy those same benefits.

If you have decided to take the plunge and give it a try, site selection is the first major decision. The fruit trees will want plenty of sunlight. One good place to locate a trellis is on the south or west side of a building. They can also be located just about any place there is direct sun for most of the day. There will need to be a supply of water close by, and the area wetted by irrigation should be large enough to support the tree. If flood irrigation is to be used, an area at least twenty-four inches wide and long enough to support the roots of the tree will be needed to provide room for the roots to grow. A drip irrigation system can also be used.

The trellis itself will need to be strong and long lasting. It has to do its duty for the life of the tree so do not skimp on the quality of materials. It has to carry a lot of weight, so the posts need to be firmly anchored to the ground. Both

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metal or wooden posts can be used for a frame, or, alternatively, the trellis system can be attached directly to the wall. The trellis itself is important, so give it a lot of thought.

I like to use a wooden frame. I select four-inch by four-inch wooden posts and anchor them to the ground using a concrete pedestal for each upright. This can be done by mixing and pouring concrete into holes in the ground dug for the purpose. It is important to align the posts so that they are straight up and down according to a level. This provides the greatest strength and helps the trellis look good after installation. Preformed pedestals can also be purchased at a construction supply business.

Once the frame is in place, it is time to install the limb supports. These can be wooden laths or heavy gauge wire. On a trellis six to seven feet high, there should be room for four to five limbs, or "arms" on either side of the tree trunk. Space the supports equally up the trellis.

When we train a tree to a trellis, we are essentially limiting its growth to those directions that we choose so prune off any limbs that are growing in a direction that does not conform easily to the direction of the supports on the trellis. Nip them off close to the trunk with a pair of sharp hand shears. Attach the remaining branches onto the supports with horticultural tape or with plastic ties designed for the purpose. Do not tie the limbs tightly to the supports because they will need room to grow in diameter. As the tree and the branches increase in size, it may be necessary to loosen or reattach the ties so that the branches grow correctly.

Do not try to train an established tree to a trellis because the mature wood of the limbs is difficult to bend and most branches will be growing in the wrong direction. In my opinion, it is always best to start with a freshly planted tree because they are much easier to train to the supports.

The top of the tree is an important growth area. Be sure to let it continue growing until it reaches the top of the trellis. Once it reaches the height that you want it to be, and all of the supports have limbs attached, it can be nipped off so that growth is directed to those side branches that are attached to the trellis system.

By correctly training an apple, fig, pomegranate, or other fruit tree to a trellis, we often can enjoy a good supply of healthy fruit without taking up a lot of space.

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](mailto:macmastergardener@gmail.com) and a Master Gardener will contact you.

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