

Development of Leaf Pads

One of the techniques that beginner bonsai artists find hard to understand is how to develop leaf pads. Questions concerning this come up more than any other when we work with newcomers to the hobby. So let's take the time to discuss a couple of the key points in developing "ramification" since this is key to having good leaf pads.

As a tree in nature grows, the original branches begin to put out secondary branches and these eventually put out third level branches, and so it goes until the tree is fully grown and covered with thousands of small twigs. At this time there may be at least 6 to 7 levels of sub-branching. When one looks at the canopy of a tree in nature, what you see are the tens of thousands of leaves held by thousands of small (sixth or seventh level) branches.

The challenge to the bonsai artist, whether beginner or highly experienced, is to force the bonsai to create secondary, tertiary and even fourth and fifth level branches. This is what is being referred to when you hear someone talk about ramification. Each of these small branches will produce leaves and when the primary and secondary ones are wired to form the desired shape, these create the leaf pads. It is assumed here that all beginners have done some reading on the subject of bonsai and know that not all styles have leaf pads.

To understand how to get the tree to develop ramification, one must think back to how the various parts of a tree work. You will recall (I hope) from prior information that the cambium layer of a tree is the magical layer whose cells can actually change character. These cells, you will remember, are called meristem cells. Depending on what is needed by the tree, the meristem cells can kick into action and form new leaves, new branches, new roots, flowers, etc. What we need to do then, is to get the cambium layer to begin developing new branches.

The key to doing this is the fact that at the base of each leaf petiole (stem) there is a dormant bud. This bud is dormant because the meristem cells at the tip of each branch are dominant and actually produce chemicals that keep the buds dormant that are further down the branch. If these dormant buds can be coaxed into activity, some of them will develop into small branches. The question then is how does the bonsai artist do this?

Since the meristem cells at the tip of each small branch are dominant, one can assume that if they are no longer present there will be no chemical to keep the buds further down the branch dormant and these dormant buds will begin to grow. This assumption is dead-on! The easiest way to get these thugs (dominant cells) out of the way is to pinch the tip of the branch or twig. This paves the way for at least some of the buds at the bases of the petioles to start growing. Not all of the buds are viable and not all of them will take the cue and begin to grow. Thus we leave 2 leaves on the twig when we pinch the tip. By doing this we are trying to play the odds that the buds at the base of the leaf stems will become active. If they do, then secondary branches will develop at each bud. When these new twigs have four to five leaves, you do the same thing to them and then the same thing again when these develop new twigs. The first thing you know, you have a bonsai with excellent ramification.

To turn this ramification into attractive leaf pads all that is needed is wiring the twigs (normally only the primary and secondary ones) within each pad to roughly form a triangle (for conifers) when viewed both from the side and from the top, or for broad leaf plants, it should form a shape that is triangular when viewed from the side and when viewed from the top has the shape of a hand with the fingers spread as widely as possible. This can be a tedious task when done for the first time, yet it is a necessary one. When it is time to remove the wire the task is even more tedious. Once the pads have been perfected, the task of keeping them in good shape requires only periodic pinching whenever a twig breaks out of the desired outline of each pad.

Ramification is not difficult to obtain, it just requires persistence, so keep at it.