

Balancing a Bonsai's Energy

By Charlie Mosse, September 2024

Why is balancing a plant's energy necessary? Here is the 'Reader's Digest' version. Energy balancing is a very important part of the horticulture, as well as the foliage management of a bonsai. Apical dominance (strong top growth) is a characteristic of most plants that we grow for bonsai, such as pines, oaks, Bald Cypress and most deciduous trees to name a few. In contrast, some plants are more basally dominant, strong growth at the base, naturally grow shrubbier like azaleas, olives and quince. So, we need to prune and trim accordingly to help guide the growth by controlling the energy levels in a tree to achieve balanced growth. We will scratch the surface here with more emphasis on defoliation than on pruning.

We do style our trees that can be counter to their natural growth habits. One can look at any bonsai style and find trees that have been styled by opposing their natural growth patterns to some degree, cascade Ficus, informal upright Satsuki azalea, short and stocky Redwoods and Maples to name just a few. All of this requires the usual wiring or early clip-and-grow to establish structure, and then lots of foliage management including defoliation. Defoliation has been around for a long time but is now used more often primarily for broadleaf evergreens and deciduous trees. Conifers are never defoliated, unless needle pulling and decandling of a Japanese Black Pine are considered a type of defoliation.

When branches are allowed to run out (grow very long), the upper parts of a tree outgrow the lower branches which usually results in less vigor in the lower branches. The tree hormones will send more resources to the upper parts of the tree. The lower branches will begin to appear weaker, over time they will become spindly and finally die. This is very natural for trees and shrubs to do as they grow taller and wider but it's something we need to manage.

We must counter this natural growth dominance, apical or basal, by balancing the energy of the plant by taking into consideration:

- styling goals for the tree
- tree species
- tree health
- degree of defoliation needed
- pruning, trimming, pinching and bud removal needed
- Fertilizing amount, type and frequency of application

Pruning, trimming and pinching are the most common ways people use to balance the energy of a tree. The apex is cut back and thinned, as are other dominant branches. Weaker branches are left alone or only minimally trimmed. But there are times when no more branches/twigging can be removed to accomplish the balancing needed. Defoliation, full or partial, becomes a necessary tool for balancing.

Full defoliation is self-explanatory—all leaves are removed. This is done by scissors, pulling them off by hand, or using tweezers, as in the case of JBP's. Partial defoliation is the removal of some of the leaves on a branch or pad, or by reducing leaf area by cutting the leaves in half. One can also use a combination of leaf removal and leaf area reduction. Defoliation of any percentage is done on most broadleaf evergreens and deciduous trees after leaf hardening in late spring/early summer or generally no later than early August, when a tree has hardened and stored energy from the previous round of growth. This time of the year, bougies, ficus and olives are pruned and/or defoliated after spring growth is hardened when the weather has warmed consistently, usually starting in June/July, in order to get the best response from the tree. Note: You will see that one of the benefits of thinning and defoliation is that more light gets into the interior and initiates more back budding. This can create many good choices for replacement branches for the future or filling in areas in the present. Some species back bud too much so one has to thin out many of the new buds.

Bonsaify, Bonsai Tonight, Bonsai Mirai, Eisei-en, Crataegus Bonsai, Rakuyo Bonsai and more all cover energy balancing with discussion and photos, and in some cases good video. The subject is sometimes discussed directly, but most of the time it is discussed when other actions are being discussed such as needle pulling, bud selection, candle selection and removal, different degrees (amounts) of defoliation, pruning, thinning, cutting back and more. This shows how important energy balancing is in bonsai—it is done constantly, many times without thinking about it.

Important Note: If a tree is to be defoliated, it must be healthy. Defoliation, like major pruning and full repotting, will stress and weaken a tree. Then the tree uses a lot of stored resources to regrow. A healthy tree will fully and quickly regrow in a timely manner. For most areas in San Diego, after defoliation, it takes most species about 3 months to re-grow, harden off and start to store food again for the next growth cycle. The length of time to recover depends on tree health, growing conditions, weather, species and was it defoliated at the proper time of the year.

As an example, see the tree on the left in the first photo. This Ficus Burt-Davyi was energy balanced about 2 months ago. It has regrown, almost hardened off and is in good health. Now, referring to the tree on the right in the first photo, the apex and top 1/2 of the tree were

completely defoliated and trimmed. The apex was trimmed a little harder than the branches that are just below the apex. Trimming the apex harder than the branches just below the apex will slightly slow the regrowth of the apex to better match the regrowth of the branches just below. The lower ½ of the tree was partially defoliated and also lightly trimmed. Leaving most of the leaves on the lower branches keeps them stronger and they will grow back faster, hopefully at the same time as the top ½ of the tree. Note: One secondary branch in the lower half did not have a lot of leaves. So, I left it alone to strengthen. Sometimes this is better. There are times when the entire tree is defoliated, rather than as above. This is a judgement call.

When ficus are defoliated in July and August, they regrow fast: New buds in several days, lots of growth within weeks. If done in April, it can take 2-3 times longer but the tree still regrows. Just be careful not to overwater with less foliage. Doing this in mid-September to October when it is still warm (but can get cool especially at night), regrowth can also take longer and the tree may not completely regrow before it gets too cool. This also is species dependent.

We do these procedures all of the time, frequently not thinking about how we are affecting the tree. These procedures stop or at least reduce the production of sugars and starches, hormones and enzymes a tree needs to grow, to stay healthy and fend off diseases and pests. Balancing the energy in a tree is necessary to create a quality bonsai that is healthy.

Energy balancing can be confusing for us all because there are many nuances. But learning it is very necessary for the creation of **quality bonsai**. It will become second nature to do so.

As always, the monthly meeting is the best time to bring in a tree (or two or three) for hands-on assistance. You can also post questions and photos on the SDBC Facebook page or on the SDBC web site and someone will answer your questions.