

The Concept of Energy Balance in Bonsai

We must understand some very fundamental things about plant growth and energy production to understand good bonsai practice.

The cambium layer is just under the bark. This is where new cells develop. This is where the plant expands and grows larger because these cells produce the transport tissue that grow as the foliage enlarges. These are arteries and veins of the plant: Xylem, and Phloem. The Xylem function is to take water and nutrients up into the leaves. The leaves are the food factories or “photocells”. They take in light, water and carbon dioxide, and make sugars that provide the energy to drive all the growth processes plants need. Leaves are also a ventilation system. They provide cooling by allowing water to evaporate from their surface. They take in carbon dioxide and give off oxygen. The phloem transports the sugars down to the roots for storage or use in the plant. This is a very simplified explanation of what happens in a plant.

If you take nothing away from this class: when you prune, bend, or shape your plant you are doing some damage which requires energy for growth and healing.

Every technique which we apply to a tree to design a bonsai is done with a specific goal in mind. The decision to perform that technique or task requires that we consider the energy balance within the tree. Performing some technique on a tree which is already depleted of energy stores may even kill the tree or delay the growth and healing we are trying to achieve.