

## Growth Regulation of Trees

Chad M. Rigsby, PhD, Research Scientist

### Residential Landscapes

Managing trees in ways that promotes growth and results in large, mature trees is often desirable because these specimens offer the greatest economic (e.g., reducing utility bills due to shade) and environmental (e.g., carbon storage) benefits. However, in certain situations, smaller trees are better suited for limited spaces. Products, referred to as “growth regulators,” have been developed to maintain trees at reduced sizes.

### Paclobutrazol

Decades ago, plant pathologists were exploring new chemistries that could be used to manage plant diseases. One of the substances that was tested, paclobutrazol, exhibited mediocre results at managing plant diseases, but was effective in reducing plant growth. This spurred research into the phenomenon of “growth regulation.” Practitioners recognized the usefulness of this discovery and formulated products that could be used in agriculture, horticulture, and urban forestry. Bartlett Tree Experts utilizes Cambistat®, a highly effective growth regulator, to maintain the size of certain trees in specific situations (Figure 1).

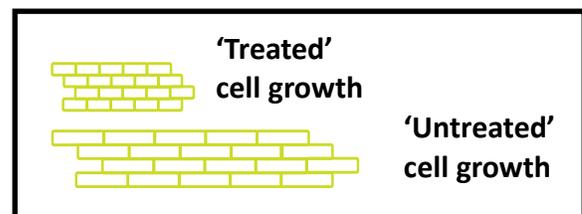
### How Growth Regulators Work

The concept of regulating the growth of a tree may seem harmful, but it does not detrimentally affect plant health. Paclobutrazol, the active ingredient in Cambistat®, reduces the production of growth hormones in the plant. These hormones are responsible for making plant cells larger. When Cambistat® is applied, plant cells expand less, but the same number of plant cells are produced (Figure 2).

**Figure 1: Tree treated with Cambistat® (left) and an untreated tree (right)**



**Figure 2: Effect of Cambistat® on plant cells**



### The Use of Growth Regulators

Maintaining the current size of a tree is the primary goal for using a growth regulator. Those planted in close proximity to a building may outgrow their space, pose safety problems, or generate excessive flower/fruit debris. Fast-growing tree species in the landscape make ideal candidates for growth

regulation. Typically, they require pruning every few years to promote proper structure and size. Alternatively, a single application of Cambistat® can maintain the desired size of the tree and drastically reduce the need for pruning.

Space requirements may not be the only reason for treatment. A particular view from a house (e.g., through a window or from a porch or back deck) may be desirable. In these instances, an arborist can prune the tree to allow the view (known as vista pruning) and then maintain the size of that tree after pruning with Cambistat®.

### Other Potential Benefits

While growth regulation is the primary goal of treating with Cambistat®, other potential benefits have been documented. Treated trees develop a dense crown offering shade and darker green foliage. In addition, Cambistat® can have a stress-relieving effect on trees, enabling them to better handle hot, dry conditions, saline soils, or minor nutrient deficiencies. In some cases, treatment has reduced foliar disease occurrence and a slowed canker disease progression. However, Cambistat® is not a cure-all or replacement for good cultural practices and proper pest and soil management.

### Discuss With Your Arborist, First!

Important considerations for growth regulation include the tree species, current size, and plantings at the base of the tree. The site, planting grade, and time of year are also important. Details such as these should be discussed with your Bartlett Arborist Representative prior to the application of Cambistat®.



**Founded in 1926, The Bartlett Tree Research Laboratories is the research wing of Bartlett Tree Experts. Scientists here develop guidelines for all of the Company's services. The Lab also houses a state-of-the-art plant diagnostic clinic and provides vital technical support to Bartlett arborists and field staff for the benefit of our clients.**