

All the articles on this page also appeared in [The Gardiner](#) magazine, was written by [Gary English](#) and published with his kind permission..

© Gary English gary@cybersmith.co.za

© The Gardener Magazine - Editor: Tanya Visser tanya@thegardener.co.za

Auxins

It? s spring again, a wonderful season for the gardener as plants come alive. Everything is shooting like crazy, unfortunately the weeds seem to grow faster than anything else, here in Durban anyway.

It is very important to keep your bonsai trimmed at this point as it takes just a little bit of neglect for your trees to get out of control.

But what actually happens when you prune or nip the buds of a plant?

It is time to get technical. The following explanation is valid for pretty much all plants, and not just bonsai, and a layman? s understanding of the growth patterns of plants will benefit all. It is not too difficult, so here goes. . . .

Auxins are growth hormones that regulate, and inhibit, growth in plants. They are produced in the areas of new growth (meristems), just behind the apical buds, and are produced as a result of signals sent back by the apical buds themselves. They are present throughout the plant in varying quantities.

Auxins primary function is to inhibit lateral growth, and promote cell elongation, and division. They do this by aiding in the uptake and retention of water. Auxins are eradicated by sunlight. Auxins are therefore found on the shaded side of a branch. This will cause the cells to elongate and divided faster than the cells on the sunny side. This extra growth on the shady side will cause the meristem to grow toward the light. I remember this from high-school biology. It is called Phototropism.

Let? s take it a little further. If one removes the apical bud (pruning), there will be fewer auxins to inhibit lateral growth. With fewer auxins around, other growth hormones called Gibberellins (they promote lateral growth) take charge. The plant will then grow thicker, producing new lateral shoots and hopefully branches.

This also reinforces the idea that bonsai need to be outside in the sun. More sun fewer auxins resulting in shorter cells with less water content. Keep your plant in the shade and long spindly growth will be the result. Rotating your bonsai in relation to the sun every few weeks will also help your tree to retain its shape.

It is interesting to note that roots have almost an opposite response to auxins. Although small amounts of auxins promote root growth, large quantities inhibit growth. This causes the roots to grow away from the light, downwards. Clever hey? This is called negative geotropism. Shoots that grow upward against gravity have positive geotropism.

Auxins are involved in many other essential functions. They delay fruit ripening, they also are responsible for the drying up of leaf stalks prior to them falling off in winter. Most of the other functions are too involved for us, weekend gardeners, to worry about, but next time you prune your bonsai remember you are not being cruel, you are just performing a necessary biological function by eradicating auxins. It is the empty spaces that create the atmosphere, not all the stuff? one crams into the positive spaces.

Next time you are chatting to your local Japanese bonsai master, drop in a few words like auxins, gibberellins and phototropism. Neither of you may know what you are talking about, but only you will know that!