Plant Hormones in bonsai

Auxins

Auxins promote stem elongation, inhibit growth of lateral buds (maintains apical dominance). They are produced in the stem, buds, and root tips. Example: Indole Acetic Acid (IA). Auxin is a plant hormone produced in the stem tip that promotes cell elongation. Auxins move to the darker side of the plant, causing the cells there to grow larger than corresponding cells on the lighter side of the plant. This produces a curving of the plant stem tip toward the light, a plant movement known as phototropism. Most plants have lateral buds located at nodes. Auxins maintain dormancy in these buds. If the apex of the shoot is removed, the Auxin is no longer produced. This will cause the lateral buds to break their dormancy and begin to grow. In effect, the plant becomes bushier

Relevance to bonsai is that Auxins allow us to thicken a branch by leaving the Auxins in the tip or cutting it to get the foliage pad to form from the lateral buds. Fertilisers that have Auxins in are Kelp, Superkell and Wonder Supranure.

Gibberellins

Gibberellins promote stem elongation. They are not produced in the stem tip. Gibberellic acid was the first of this class of hormone to be discovered. This hormone can affect leaf size and particularly intenode length or it can dramatically increase internode length.

Relevance to bonsai is obviously the leaf reduction, which plays a big part in the composition of the tree. Fertilisers that have Gibberellins in are Nitrosol

Cytokinins

Cytokinins promote cell division. They are produced in growing areas, such as meristems at tip of the shoot. They help in the rooting process of cuttings. Plants with a high Cytokinin level e.g. ficus species root better than species with a low Cytokinin level e.g. Ginkgo *biloba.*

Relevance to bonsai is for cuttings to propagate more bonsai material at a low cost or for practice material for oneself. Cytokinins can be found in Kelp, which make Kelp and seaweed fertilisers a good fertiliser for young plants.

Abscisic Acid

Abscisic acid promotes seed dormancy by inhibiting cell growth. It is also involved in opening and closing of stomata as leaves wilt.

Ethylene

Ethylene is a gas produced by ripe fruits. Why does one bad apple spoil the whole bunch? Ethylene is used to ripen crops at the same time. Sprayed on a field it will cause all fruits to ripen at the same time so they can be harvested.

Relevance to bonsai is that it can be onto flowering or fruiting trees so that a mass of colour can be obtained for a show.

Just for Interest sakes.

BAS-1 appears to control the level of an important steroid hormone that stimulates growth in plant cells. The product of the BAS-1 gene (the full name is phyB activation-tagged suppressor 1) breaks down an abundant growth hormone, the steroid brassinolide. in the Salk study, its effects were observed mainly in plant stems, and to a lesser degree in leaves and flowers. This then can be referred to as a dwarfing hormone. The gene, called BAS-1, can potentially serve as a "volume knob" that would allow growers to set the height of grass, trees and other plants. Think of hedges that never need pruning or instant bonsai.