

## **A Bonsai Close-up on Rooting Hormones**

by Pauline Muth (Copyright 1995)

Rooting hormones replicate the natural chemicals produced by plants to regulate specific types of growth. These chemical hormones are called **auxins**. Auxins are synthesized in the cells of the plants. Gravity transmits the specific auxins that control the formation of roots to the lowest part of the plant. In growing plants this is normally at the base of the plant in the soil. The root auxins chemically signal the cells at the base to develop as root cells.

When a branch of a plant like a rhododendron bends and reaches the soil, the rooting auxins travel from the leaves down to the point at which the stem touches the ground (the lowest point for this auxin). If the conditions at this point are warm and moist, roots will form. After the roots are well established, the stem attaching the branch to the plant is cut and the new plant will grow on its own.



Botanists learned that the auxin **indoleacetic acid (IAA)** is naturally manufactured by plants to promote root growth. IAA is not stable when exposed to light or high temperatures. Nature uses these factors to control growth but these properties also make it difficult to store and use. In place of IAA, two synthetic auxins are generally used: **Naphthalene acetic acid (NAA)** an/or **Indolebutyric acid (IBA)**. These auxins are more stable than IAA but they have a limited shelf life of six to eight

months. It is wise to purchase rooting hormones in small quantities and then store them in a cool dark place tightly capped.

Several companies manufacture rooting powders. These powders contain one or more auxins in a talc base for application. Liquid auxin mixes can also be purchased. The liquids are usually concentrated and are mixed with water to use. Use the rooting powder or liquid in the correct strength for each type of plant. Herbaceous plants use a weaker strength than woody plants.

**To use the rooting powder or liquid for cuttings**, put a small amount in a separate container where you can dip the dampened cut end of the plant before inserting it in the rooting medium. ( see **Cuttings** ). It is best to use a chopstick to create a hole in the medium and then put the cutting in the hole. If you use the cutting to make the hole you will remove some of the rooting powder. Never return extra powder to the original container. It may be contaminated with bacteria and moisture. This can shorten the shelf life and/or transmit disease to other cuttings.

**Rooting hormones are also used to promote root growth in newly trimmed and potted bonsai.** When you have styled a bonsai and cut its roots or repotted an established bonsai, brush the cut roots with the rooting auxin before planting. This is especially worthwhile when a large percentage of the roots have been removed while styling the bonsai.

Excellent small bonsai can also be created by using auxins to promote the formation of roots when **air layering new trees** from established trees in landscapes, nursery stock or older bonsai. (See **Air Layering**)

Comments or questions to  
[Pauline@pfmbonsai.com](mailto:Pauline@pfmbonsai.com)

