

We are unable to supply this entire article because the publisher requires payment of a copyright fee. You may be able to obtain a copy from your local library, or from various commercial document delivery services.

From Forest Nursery Notes, Winter 2011

193. © Propagation of plants from cuttings using rooting solutions by foliar methods. Kroin, J. International Plant Propagators' Society, combined proceedings, 2009, 59:437-453. 2010.

Propagation of Plants From Cuttings Using Rooting Solutions by Foliar Methods®

Joel Kroin

Hortus USA Corp., PO Box 1956 Old Chelsea Station, New York, New York 10113 U.S.A.

Email: support@hortus.com

INTRODUCTION

To be efficient and competitive it is necessary to use effective methods. In propagation, the goal is produce high quality and high yield production. Material cost must be minimized. It is also important to select labor-saving methods that assure all plant materials are properly treated.

I have never completely read a whole book on plant propagation nor a complete chapter. I did however read a popular book on nursery management. Written in '96, the esteemed writer explains that the best way to propagate a plant is to use its natural reproduction ability. Perhaps you own this popular book, the *Nursery Book*, written by Liberty Hyde Bailey, not 1996 but 1896, more than 120 years ago. He did not discuss plant rooting substances since scientists had not yet identified them (Bailey, 1896).

Contemporaries of Bailey, Darwin, and other scientists, identified the polar transport of natural substances from the apical part of the plant downward. Plant researchers had long known that plants produce substances that cause dormant cells to divide and become roots. In 1934, Thimann and Went identified the substance to be IAA (indole-3-acetic acid), a plant growth regulator, now called an auxin. Scientists soon proved the ideas of Darwin. Plants produce auxins in leaves (Thimann, 1977; Darwin, 1880). The auxins move from the apical to the basal part of plant cuttings. Foliar application of bio-simulators of the natural auxin travel like the natural auxin. When used for root initiation, the threshold amount of all auxins are accumulated and utilized at the basal end.

Methods to apply auxin solutions to the leaves of plant cuttings will be discussed. Using readily available equipment, these methods assure all cuttings are properly treated using minimum labor and materials.

AUXIN METABOLISM

The natural auxin, indoleacetic acid (IAA), produced during the development of leaves, is found in free and bound states.

Free auxins are available immediately. They move within the plant in polar transport, from the elongating leaf tips and continue downward, through the vascular system, to the basal end (Aloni, 2004). Free auxins are present when auxins are dissolved in water to make auxin solutions.

Bound auxins are variable and limited in their ability as plant growth regulators. Bound auxins are present when auxins are made into dry powder (often called "rooting hormones") and blended with lanolin. Bound compounds, applied close to the basal end, do not need polar transport to initiate roots since they are close to where roots are to be formed (Fig. 1) (Leopold, 1955).