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Propagation of Cuttings Using Foliar-Applied Indolebutyric Acid in Aqueous Solutions at or After Sticking[®]

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INTRODUCTION

When propagating plants from cuttings, plant hormones called auxins can be applied to induce root formation. The auxin most used in plant propagation is indolebutyric acid (IBA). Basal application of auxins, done all year, has been done at the time of sticking using dry powders or solutions. Foliar application of auxin in aqueous solutions has been done in the growing season on leafy plant cuttings either before or after sticking. The applied auxin enters the plant's vascular system through open stomata. The auxin solutions travel with the natural auxin indole-3-acetic acid (IAA), by polar transport, to the basal end of cuttings where they can induce root formation.

The present study is to find out if there is a difference in root numbers on cuttings of the annual plant *Begonia* 'Red Wing', if an indole-3-butyric acid (IBA) in aqueous solution is foliar applied at time of sticking or several days later. Commercially, Aris Green Leaf Plants, on perennials, and Bailey Nurseries, on woody ornamentals, both recommend an IBA in aqueous solution foliar treatment within the day after sticking. Using foliar applied IBA in aqueous solutions on the woody plant *Ficus pumila* (creeping ficus) by Dr. Fred T. Davies, all treated cuttings (both mature and juvenile), had higher root numbers than untreated cuttings.

The current study found IBA in aqueous solution foliar treatment to be effective on annual cuttings. Application can be done at time of sticking and up to several days after sticking. Higher root numbers occurred on cuttings when treatment was near the time of sticking. Root numbers diminished when treatment was done on later days.

FOLIAR APPLIED ROOTING HORMONES TO INDUCE ROOT FORMATION ON CUTTINGS

Since the late 1800s, scientists, including Charles Darwin, believed substances produced in the leaves of the plants regulated other parts of the plant (Darwin, 1880). "In 1893 (Julius) Sachs' suggestion was that special stimulating and constructive substances are formed in the metabolic processes in leaves" (Reynolds-Green, 1909). In 1934 Thimann and Went identified this substance as IAA. Produced in the leaves during growth, they called it an "auxin" or "plant hormone." They also identified the bio-simulators of IAA, IBA, and nathaleneacetic acid (NAA), more stable than IAA yet producing similar effects. In their book, *Phytohormones*, they define "a hormone is a substance which, being produced in any one part of the organism, is transferred to another part and thereby influences physiological responses." They found application of auxin to the leaves of plants had a positive effect on basal root formation. They also identified the route of the auxin, from leaves to the basal end of cuttings, as polar (one way) transport (Thimann and Went, 1937).

Auxins in aqueous solution can be applied to the foliage of plants in the growing season. They can enter through open stomata where the leaves capture the