

NEW ROOT-INDUCING SUBSTANCES DISCOVERED IN MIST PROPAGATION

Sidney Waxman
Associate Professor of Plant Science

Mist propagation has been in use by commercial plant propagators for more than 20 years. The excellent results usually obtained under mist, especially in the rooting of softwood cuttings, have always been attributed to the fact that tender cuttings can be kept turgid even in bright sunlight. The cooling effect caused by the evaporation of water from the leaf surface prevents excessive water loss. Under the relatively high light intensity permitted with mist, photosynthesis rates would actually bring about an increase in the carbohydrate content of the cuttings. On the other hand, if mist were not used, the shading needed to prevent wilting would restrict the rate of photosynthesis and would consequently lower the carbohydrate content of the cuttings.

Recent research published by Lee & Tukey of Cornell has shown that there may be additional reasons for the excellent results obtained with mist.*

They carried out their research on the rooting of Euonymus alatus, the Winged Burning Bush. There is seasonal variation in the rooting ability of this species. Cuttings taken in spring and early summer are easily rooted while cuttings taken in the fall are more difficult. The difficulty can be partly overcome

*Lee, Choong, Il. 1971. Induction of Root Promoting Substances in Euonymus alatus 'compactus' by Intermittent Mist. J. Amer. Hort. Soc. 96(6):731-736.

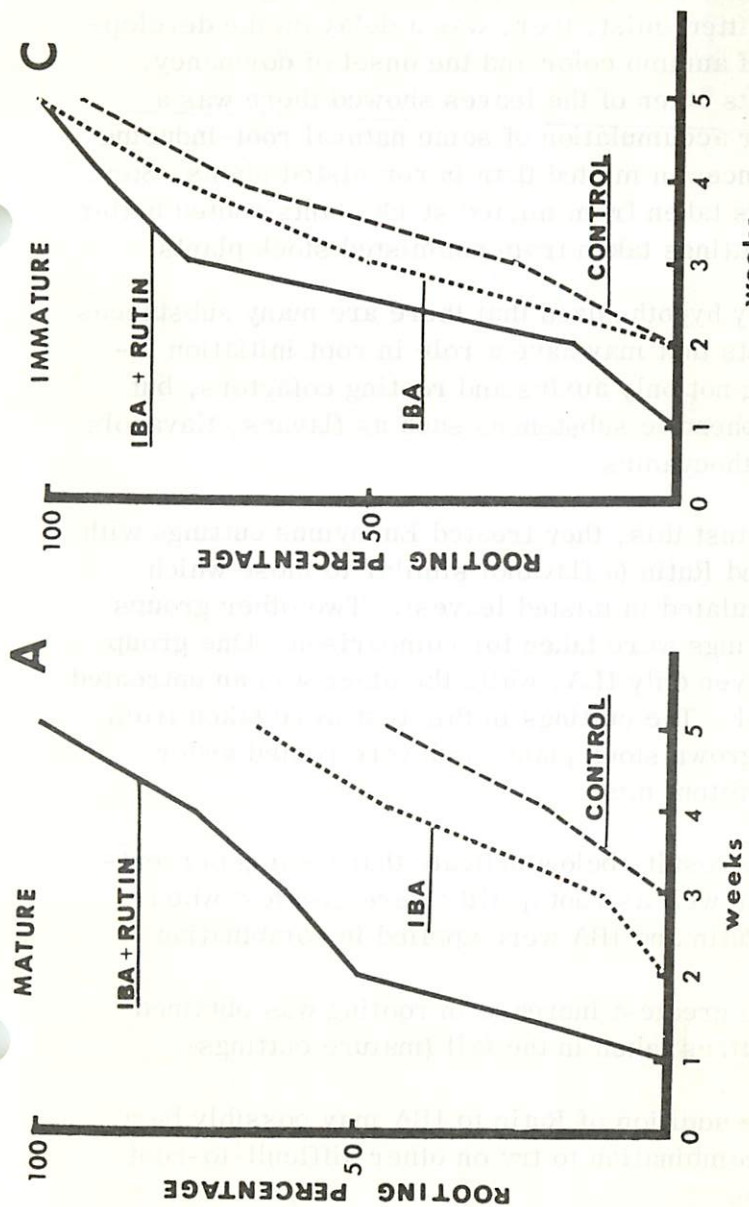


Fig. 2. Rooting of *Euonymus alatus* 'Compactus' cuttings as influenced by exogenous applications of IBA (2000 ppm) and rutin (1500 ppm). A. Rooting percentage of mature cuttings. C. Rooting percentage of immature cuttings.

by rooting the cuttings under intermittent mist. It was found that when entire plants were grown under intermittent mist, there was a delay on the development of autumn color and the onset of dormancy. Extracts taken of the leaves showed there was a greater accumulation of some natural root-inducing substances in misted than in nonmisted plants. Stem cuttings taken from misted stock plants rooted better than cuttings taken from nonmisted stock plants.

They hypothesized that there are many substances in plants that may have a role in root initiation including not only auxins and rooting cofactors, but other phenolic substances such as flavans, flavanols and anthocyanins.

To test this, they treated *Euonymus* cuttings with IBA and Rutin (a flavanol similar to those which accumulated in misted leaves). Two other groups of cuttings were taken for comparison. One group was given only IBA, while the other was an untreated control. The cuttings in this test were taken from field-grown stock plants and were rooted under intermittent mist.

The results below indicate that rooting percentages as well as root quality were greatest when both Rutin and IBA were applied in combination.

The greatest increase in rooting was obtained on cuttings taken in the fall (mature cuttings).

The addition of Rutin to IBA may possibly be a good combination to try on other difficult-to-root species.