

Assessment of Rooting Hormone Formulations

Paul Carmen

52 Woralul Street, WARAMANGA ACT 2611

INTRODUCTION

Many trials are carried out to assess methods and rooting hormone formulations. However the results are not always what they seem. This paper aims to show how difficult it is to assess trials if the age of the hormone formulation is unknown and what can be done to overcome this problem.

MATERIALS AND METHODS

Propagation staff at the Australian National Botanic Gardens developed a method of preparing cuttings which involves re-cutting the stems to open up the transpiration stream before dipping. This method is thought to optimise the uptake of rooting hormone. A series of trials were conducted to assess which hormone formulation best suited the method. Formulations of IBA in alcohol, in powder form, and KIBA in water were compared. The conclusions are far more important than the results!

Trials. One trial with *Acacia baileyana* (prostrate form) compared powder (Rootex[®]) and alcohol formulations with a concentration of 3000 ppm. The results indicated that the alcohol solution was the most effective in terms of strike rate, 66% compared to 20% for the powder. The alcohol solution was freshly prepared for this trial. The powder had been purchased a few months prior to the trial.

In a more recent trial (1996) with *Acacia covenyi* two liquid formulations were used, an alcohol solution (Rootex[®]) and a potassium salt of IBA dissolved in distilled water, each with a concentration of 4000 ppm IBA. The results of this trial indicate that KIBA (46% strike) was more effective than the alcohol (28%).

Problems with assessment. Little was known about the powder used in the first trial. It was labelled as 3000 ppm IBA, but its age, and therefore the efficacy of the hormones contained within it, was unknown. It is impossible to assess trials such as the one conducted above unless this information is known. Many variations in rooting response may well be due to propagators using "old" solutions.

Shelf Life. Some premixed formulations have "use by" dates which may give an indication of the shelf life of the hormones within. Hartmann and Kester (1975) suggested that trialing rooting hormones with tomato leaf cuttings was a good method of assessing the level of active ingredient. Robbins (1987) prepared solutions of IBA using isopropyl alcohol and stored these in clear or amber glass bottles at various temperatures to assess the degree of breakdown of the chemical. A significant breakdown was measured after 19 months stored at room temperature (22 to 25C). The effect of storage in plastic bottles or using water as the solvent was not reported.

Most professional propagators mix their own formulations. IBA and KIBA, in crystal form bought direct from Chemical supply companies, are less expensive than commercial premixed formulations, and mixing your own always guarantees access to fresh hormones. However it is necessary to accurately measure these concentrated chemicals, so access to a good set of scales is essential.

Knowing the age and therefore likely activity of rooting hormones means the propagator can eliminate one of the many “unknowns” and concentrate on other factors which may be limiting their success.

CONCLUSION

- 1) Mix your own rooting hormones. Plan it so that your rooting hormone is as fresh as possible, e.g. fill a series of bottles with enough chemical to make 100 ml of solution, keep them sealed and then add the solvent as required and always record the date of mixing on the container.
- 2) If you are unsure how effective your rooting hormones are, carry out a trial using tomato leaf cuttings (Hartmann and Kester, 1975). This will give a quick indication.
- 3) Use a dish that can be covered (petri dish) between dippings, this will minimise evaporation (thus increasing concentration) and lessen the possibility of contamination.
- 4) If buying premixed formulations choose only those that have a “use by” date. A good rule of thumb is to keep for a maximum of 12 months after opening, so don't forget to record the date of opening on the bottle.

LITERATURE CITED

- Hartmann, H.T. and D.E. Kester.** 1975. Plant propagation - principles and practices. p. 294.
- Robbins, J.A.** 1987. Long-term shelf-life of indole-3-butyric acid solutions. Comb. Proc. Intl. Plant Prop. Soc. 37:116-118.