

ASPECTS OF PROPAGATION HYGIENE

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*Duncan and Davies
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Hygiene in a propagation unit really begins with the stock plants. Duncan and Davies have extensive stock areas, about 20 acres. These require regular spraying and pruning to keep them in good order; propagation hygiene must start with clean healthy cutting material. A general spray programme, consisting of the following, is applied with a motor blower sprayer to all stock plants: 2-1/2 oz Lorsban insecticide, 6 oz Dithan M45 fungicide, 1-1/2 oz Topsin M fungicide. These are put into a 3 gal motor-blown sprayer.

Any specific pest or disease not controlled by this combination is picked up with routine checks and the following sprays are usually used to combat these: 3/4 oz Plictran for mites; 3 oz Cuproxide + 1/2 oz Agrimycin for fungous diseases. All of these again in 3 gallons of water. This programme outlined controls most pests and diseases, but other controls are used for specific pests. Recently the nursery has undertaken the spraying of stock plants and nursery crops with a helicopter with some success.

The next stage is to get clean healthy cutting material through a fungicidal wash prior to going to the cutting bench to eliminate further fungus troubles that we may introduce into the propagation area. The collected cuttings are sent through a Captan dip, which we use because of its general fungicidal properties and its relative safeness. A rate of 10 oz in 20 gallons is used and changed twice a week.

Cutting benches are scrubbed each week with a Jeyes fluid wash at 2 tablespoons per gallon. We endeavour to get clean cuttings into clean houses and the following are the steps used to clean all our propagation areas, generally about twice a year, or when the house is emptied or space permits.

Firstly, a high pressure steam cleaning unit is used to remove all traces of algae, slime, dirt and any plant remnants. Even the most stubborn algae is literally blasted off and washed away. The P.V.C. ceiling is then sprayed with Solar Sunclear, applied with force to enable the ionized particles to adhere. This eliminates excessive condensation drip and is used at a rate of 1 pint in 7 gallons of water for 2,000 sq. ft.

The walls, which the mist jets spray against, are treated next with a Dentolite sterilizing solution. This is an anti-fungicidal and bacterial wash. We use a paste brush and paint

on the 'Dentolite' wash. This prevents any algae or slime from growing on the P.V.C. or polythene cover for several months.

The propagation beds are treated with Dinamin-A where cutting trays are to sit. This controls algae, slime, moulds, bacteria, mosses and liverworts. It is residual and does last for a worthwhile period keeping the surface clean. If algae builds up on the paths, copper sulphate crystals are dissolved and watered onto the concrete. This is most effective. Dinamin-A is used on sand beds, but Jeyes fluid, at 2 tablespoons per gallon watered on, is also effective and may be watered over cuttings if the need arises.

At present neither our cutting trays, (plastic plixie trays) nor our cutting media is sterilized. Media consist of fresh (1 to 3 months old) untanned *Pinus radiata* sawdust, Irish peat, sand and perlite, all relatively uncontaminated ingredients. Ter-razole is incorporated in all propagating and growing media at the rate of 2 oz per cubic yard to control *Pythium* and *Phytophthora*. We hope to have in the near future, a fumigating shed for methyl bromide for use with all pots, trays and media. Although we do not sterilize these at present, we have not met with any buildup of troublesome diseases.

When the cuttings are placed in the houses we undertake regular spraying every 10 days using the following therapeut-ants:

Orthocide 80W — Captan: for its general fungicidal prop-erties and also, perhaps, for beneficial cutting stimula-tion.

Lorsban 50: for general control of caterpillars, some scales and mites.

Topsin M: for control of *botrytis*, fungus spots and powdery mildew.

These treatments generally keep the cuttings free from pests and diseases while they are in the propagating houses and, except for specific problems that may arise, are usually all that is given. Generally daily checking is carried out; picking off dead and diseased leaves, removing collapsed cuttings, and keeping beds free of weeds is a routine job. Paths are washed down daily when the house is being filled and tidyness is encour-aged.

There are probably many other ways of maintaining hygiene standards, but these are the general steps followed at Duncan and Davies and we find that they enable us to keep our houses and cuttings reasonably clean and disease-free.