

INSECT AND MITE CONTROL USED IN PROPAGATION

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Control of insect and mite pests remains an important part of the total scheme of propagating plant materials. Ideally, control of these pests is only a small part of the total management program. Both cultural and chemical practices are important in keeping insect and mite pests under control. The following includes general suggestions for cultural control of pests and comments about chemical control of spider mites, whiteflies, and thrips—three important pests in plant propagation situations.

CULTURAL CONTROL

Cultural control of pests in plant propagation operations is as important as chemical control in most cases. The following are a few important points to remember:

a) **Pest-free stock plants:** Many insect and mite problems on cuttings can be traced back to the presence of these pests on stock plants. Care should be taken to examine stock plants regularly and control pests there before cuttings are taken. Low levels of mites and insects on stock plants can be controlled more effectively than high levels of these pests. If possible, keep cuttings in areas apart from stock plants. If stock plants are too badly infested for control to be achieved, destroy them and start over. Cuttings received from other growers should be examined as closely as possible.

b) **Sanitation:** Sometimes abandoned plant stock or weakened cuttings are left in close proximity to maintained propagated plant material. Insect and mite infestations may go unobserved in areas where plants are discarded. Regular removal of discarded or unmanaged stock can reduce pest populations in the area. Dumping sites should not be close to maintained areas.

c) **Weed control:** Mites and some insect pests may be attracted to certain weeds and move from weeds into propagated material. Weeds should be eliminated or mowed regularly in areas adjacent to propagation sites. Weeds within propagation areas should also be eliminated.

CHEMICAL CONTROL

Chemical control used in plant propagation includes control of pests on stock plants and on cuttings. Some pesticides are registered for use only on woody plants, others only on foliage plants; some for only greenhouse use, others for a variety of sites. Some are

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registered in some states and not in others. Always read the label for use information and restrictions, and follow label directions. All pesticides listed here are recommended at label rates. Remember that *good coverage* (contact between pest and pesticide) and *proper timing* are essential in controlling pests. This may mean *staying on schedule* with treatments. Alternating pesticides is important in delaying or preventing pest resistance.

Spidermites (two-spotted) damage plants by extracting plant juices. Their presence may go unnoticed when levels are low. Some common miticides are as follows: avermectin (Avid[®]), fluvalinate (Mavrik[®]), dienochlor (Pentac[®]), bifenthrin (Talstar[®]), aldicarb (Temik[®]), hexakis (Vendex[®]), tetradifon (Tedion[®]), as well as smoke generators containing dichlorvos and sulfotep.

Whiteflies are closely related to scale insects. Immature stages extract plant juices and produce honeydew. Whiteflies should be controlled while numbers are low. Severe populations are difficult or impossible to control. The sweet potato whitefly is now a pest on ornamentals in the southeastern U.S., and is especially difficult to control. Controls are directed toward both adult and immature whiteflies. Some insecticides that have indicated effective whitefly control by growers and/or researchers are as follows:

- a) for adult whiteflies: sulfotep (Dithio[®], Plantfume[®]); pyrethrins plus pipernyl butoxide (Pyrenone[®]); resmethrin.
- b) for immature whiteflies: aldicarb (Temik[®]); oxamyl (Vydate[®]).
- c) for both adult and immature whiteflies: bifenthrin (Talstar[®]); bifenthrin (Talstar[®]) plus acephate (Orthene[®]); endosulfan (Thiodan[®]); permethrin (Pramex[®]); fluvalinate (Mavrik[®]); acephate (Orthene[®]).

Thrips are small insects that damage a wide variety of wild and cultivated plants by rasping plant tissue. Their feeding distorts new plant growth and damages buds. In dry springs or autumns they may move in great numbers into plant propagation areas, including greenhouses. Insecticides may give limited control of thrips certain times of the year. Some insecticides used for thrips control are acephate (Orthene[®]); fluvalinate (Mavrik[®]); permethrin (Pramex[®]); bifenthrin (Talstar[®]).

In summary, insect and mite control for plant propagation includes cultural and chemical procedures. There is no substitute for regular inspection of plant materials in order to detect and control pests while they are at controllable levels.