



AN INSECTICIDE DIP FOR TROPICAL CUT FLOWERS AND FOLIAGE

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Introduction

Flowers and foliage exported from Hawai'i can be confiscated by quarantine inspectors if insect pests are found. Field control of insects is very important but rarely eliminates all pests. When properly applied, a combination of insecticidal soap and a pyrethroid in an after harvest dip is more effective for many commodities than either one used alone.

Materials

Of the insecticides tested, a soap-pyrethroid combination at the maximum label rate was most effective. Several pyrethroids and insecticidal soaps are on the market. It is important to follow the label rate because the concentrations of active ingredients vary among the different brands. The pyrethroid selected must be labeled for general ornamental use and its use as a dip must not be prohibited. We tested a combination of Mavrik Aquaflow (active ingredient: fluvalinate, Sandoz of Des Plaines, Illinois) and insecticidal soap (active ingredient: potassium salts of fatty acids) and found it effective against aphids, ants, soft scales, and mealybugs.

Method

A 2-step method is recommended for commodities with scales, those with cracks and crevices, and any highly infested material. The first step is a wash in a mild cleaning solution, e.g., LOC (Liquid Organic Cleaner, Amway of Ada, Michigan), in which tight cracks and crevices are opened to expose insects and the commodity is scrubbed to remove scales. The second step is a 5-minute dip in insecticidal soap and pyrethroid. Insecticidal soap and a pyrethroid, such as Mavrik Aquaflow, are mixed with water at the label rate and agitated to

ensure even dispersal of the chemicals. Flowers and foliage are submerged in the solution and agitated for 10 or 20 seconds. Agitation is repeated at the end of the soaking period. Total submersion should last at least 5 minutes. Longer submersion may damage plant material because of overexposure to soap. Do not rinse. Allow flowers to air dry before packing.

Based on scientific information on fluvalinate, the dip solution should be protected from direct sunlight, which causes it to break down rapidly. It should be replaced at least once a week.

Phytotoxicity

We tested dips for safety on many cut flower and foliage commodities. Insecticidal soap damaged these commodities: dendrobium, anthurium, and cycads (including sago palm and circinalis). These should be dipped in pyrethroid alone. The soap-pyrethroid dip tested nonphytotoxic for the following commodities:

Anthurium Foliage	Monstera
Bamboo Orchid Foliage	Pothos
Bird of Paradise Foliage	Green Ti
Calathea Foliage	Green and White Ti
Dracaena	Red Ti
Hala	Uluhe
Lycopodium	Whaleback

Soaps and detergents are phytotoxic to some commodities. Phytotoxicity varies depending on exposure conditions. Testing using a small sample of the crop is always recommended. After dipping, the sample should be observed for a few days for wilting or discoloration.

Safety For After Harvest Dip Treatment

Insecticidal soaps and Mavrik Aquaflow have the signal word "CAUTION," which indicates the lowest level of the three categories of risk to workers. Some pyrethroids are in higher risk categories. Read labels carefully. Avoid breathing vapors and contacting eyes, skin, or clothing. All safety precautions on the label regarding protective clothing and equipment must be followed. Eye protection, elbow-length rubber gloves, rubber or plastic apron, and waterproof boots are necessary because of possible exposure by splashing. The label may have additional requirements. A locked cover over the dip container when not in use will prevent animals and children from contacting the pesticide solution.

Disposal

Proper disposal of the chemicals must be considered in setting up a dip operation. Used dip solutions should be disposed of by applying to approved crops in accordance with all label directions, including dilution rate and approved site. Contact the Hawai'i Department of Agriculture, Pesticide Branch, if in doubt about proper disposal.

Precautionary Statement

Use pesticides safely. Follow the pesticide label. Consult with the Cooperative Extension Service or the Hawai'i State Department of Agriculture for authorized special local need registrations or additional information. The use is responsible for the proper use, application, storage, and disposal of pesticides.

References

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DISCLAIMER

Reference to a company or product name does not imply approval or recommendation of the product by the College of Tropical Agriculture and Human Resources, Cooperative Extension Service, University of Hawai'i, or the United States Department of Agriculture and does not imply its approval to the exclusion of other products that may be suitable. All materials should be used in accordance with label instructions or manufacturers' directions.