



Utilizing Dips: Clean Up Incoming Plant Material BioWorks® Products

Bringing in outside plant material also brings in unwanted pests and pathogens. Many cuttings and young plant material from domestic or off-shore suppliers contain low level insect populations. Whiteflies, thrips, fungus gnats and aphids may arrive unnoticed until later in production when populations can suddenly explode. Incoming plant material may also carry root diseases that also require early prevention.

Dips are compatible with a program that uses predatory mites and predatory or parasitic insects as a component to a pest control approach. These biological control agents (BCAs) are successful when the pest population is low. By dipping incoming plant materials, BCAs have a head start in keeping pest populations in check. By using the BioWorks products below, there is no risk of pesticide residues that will interfere with BCA feeding, growth or reproduction.

By using dips, many cuttings or trays can be quickly treated, resulting in the use of less overall volume of pest control product(s). For trays that appear stressed or suspect for disease, it may be desirable to apply a drench or drench as opposed to dipping.

See guidelines for dipping and dip process below. **Effective dips can significantly reduce the need for multiple applications of chemical pesticides later in the crop cycle.** The bottom line is that dipping saves money and time for growers.

BioWorks products have been effectively used in dips:

BotaniGard® 22WP

(Do not use BotaniGard ES)

Mycotrol® WPO

WSDA Approved (Do not use Mycotrol ESO)

RootShield® WP

OMRI Listed

NemaShield®

Exempt from EPA labeling requirements

ON-Gard®

OMRI Listed

RootShield® PLUS⁺ WP

OMRI Listed

Rates for Dipping

Note that there are two rate charts: One is for unrooted cuttings (URC) and bare-root plants (no medium surrounding the roots) and the second is for plugs, liners or other young plans that are potted in a growing medium that surrounds the roots.

For Unrooted Cuttings (URC) and Bare-root Plants: (Do not use this rate chart for plugs)

Products*	Metric Rate	US Rate
BotaniGard 22WP OR Mycotrol WPO	2.5 grams / liter	1.5 oz / 5 gallons
NemaShield	1 million / liter	19 million / 5 gallons
ON-Gard	2.5 ml / liter	1.6 fl oz / 5 gallons
RootShield WP OR RootShield PLUS ⁺ WP	2.5 grams / liter	1.5 oz / 5 gallons

*Products can be mixed together or used individually



For Plugs, Liners or Other Plant Material Growing in a Potting Medium:

Products*	Metric Rate	US Rate
BotaniGard 22WP OR Mycotrol WPO	2.5 grams / liter	1.5 oz / 5 gallons
NemaShield	1 million / liter	19 million / 5 gallons
ON-Gard	2.5 ml / liter	1.6 fl oz / 5 gallons
RootShield WP**	0.4 grams / liter	0.25 oz / 5 gallons
OR		
RootShield PLUS ⁺ WP**	0.6 grams / liter	0.4 oz / 5 gallons

*Products can be mixed together or used individually

**Select either RootShield WP or RootShield PLUS⁺ WP

Guidelines for Dipping

- Clean and disinfect the dipping tank and equipment before preparing a new dip suspension.
- Prepare only as much dip suspension as can be used in one day. If plant pathogens are a concern, prepare a new dip suspension regularly. (Recent research has shown that disease transmission from Erwinia is unlikely.)
- Use cool water when making up the suspension, keep out of direct sunlight, and maintain cool water temperatures (60 - 70o F) throughout the dipping process.
- If NemaShield is included, keep the suspension cool (60 - 70o F) and aerate the suspension to keep the nematodes alive and vigorous.
- Dip suspension should not be used for more than one day. NemaShield nematodes and BotaniGard spores will not survive overnight.
- Frequently agitate dip solution throughout use.
- Avoid dipping sensitive plants such as African violet, tender ferns, etc.
- Conduct a test by dipping a small number of plants and observe for plant damage before using dip treatment. Observe plants for 7 – 10 days for signs of injury. Do not use dips if there is any visible damage to test plants.
- Do not dip stressed/wilted cuttings or transplants.

Dip Process

- Dip vegetative or hardwood cuttings prior to planting into rooting substrate. Place unrooted cuttings in a mesh bag, immersion tray with lid, or loose in the tank. Ensure that the cuttings are not packed too tightly to promote maximum surface area coverage. Immerse the cuttings completely, gently moving the tray, bag, or plants around in the solution for at least 5 seconds to allow the solution to completely wet all surfaces. Verify that there are no dry surface areas. After dipping vegetative cuttings, keep them cool and shaded. Avoid exposing dipped cuttings to full sun, high temperature, or other stress.
- Dip trays of plugs, individual pots of liners, or other potted young plants into the suspension and gently move around for at least 5 seconds. Ensure that all surfaces have been wetted. Allow plants to dry before watering.

Refer to product labels for complete application details. Additional technical information is available on our website (bioworksinc.com) or from your BioWorks technical sales representative. RootShield®, NemaShield®, ON-Gard® are registered trademarks of BioWorks, Inc. BotaniGard® and Mycotrol® are registered trademarks of LAM International. Always read and follow label directions.