







**WHITEFLY**  
Sweet potato whitefly  
(*Bemisia tabaci*);  
Greenhouse whitefly  
(*Trialeurodes vaporariorum*)  
**NOTE:**<sup>1,2</sup>

PEST	BCA	RATE Units/m <sup>2</sup>	RATE Units/ft <sup>2</sup>	RELEASE STRATEGY	APPLICATION NOTES
	<i>Encarsia formosa</i>	5 – 10	0.5 – 1	Start Introducing in propagation and continue weekly introductions until early November.	Avoid exposure of cards or blister packs to direct sunlight. Establish a monitoring system of a minimum of 25 yellow sticky cards/ha (10 cards per acre.) The most common whitefly species in Poinsettia is <i>Bemisia tabaci</i> . For best results <i>Eretmocerus eremicus</i> effects both whitefly species. <i>Encarsia formosa</i> is not effective against <i>Bemisia tabaci</i> .
	<i>Eretmocerus eremicus</i>	5 – 10	0.5 – 1		
	<i>Amblyseius swirskii</i>	50 (when loose)	5 (when loose)	Introduce on rooted cuttings before transplant. Synchronize second introduction just prior to spacing.	Ensure good foliage coverage to guarantee a higher number of predatory mites ending up on each plant. A battery-operated blower can be used for better coverage and saving time.
		1 sachet/10-inch pot of Poinsettia or per stock plant		Introduce sachets at sticking and again after transplanting into next phase pots.	Replace the sachets with a new batch every 4 - 5 weeks.
 	<i>Dalotia coriaria</i> (= <i>Atheta coriaria</i> )	2	0.2	Release first on the organic substrate during propagation and repeat after planting to other containers containing organic material.	Release full rate during propagation. Release half rate after planting if full rate was used during propagation. Both species can be mixed and applied together. Note: Both species do not do well in Oasis plugs. In that situation apply after transplanting, at full rate.
	<i>Steinernema feltiae</i> (=NEMASHIELD®)	250K - 300K	25K - 30K	Apply during propagation.	Ensure a constant agitation/aeration of the suspension during application. Remove filters and keep a low pressure for best results. This product is also effective for the control of thrips.
	<i>Stratiolaelaps scimitus</i> (= <i>Hypoaspis miles</i> )	100	10	Release first on the organic substrate during propagation and repeat after planting to other containers containing organic material.	Release full rate during propagation. Release half rate after planting if full rate was used during propagation. Both species can be mixed and applied together. Note: Both species do not do well in Oasis plugs. In that situation apply after transplanting, at full rate.
	<i>Amblyseius andersoni</i>	4 – 6	0.4 – 0.6	Release when first lewis mites are detected. Continue releasing for 4 weeks for better results.	May also feed on Two-Spotted Spider Mite.

## Quality Starts Early

Success with BioControl Agents starts with early introductions in the crop cycle. Begin immediately after misting is off and before pest sightings and any pest pressure.

Get Guidance from a BioWorks Technical Resource



1 Especially in stock plant production during the warmest time of the year, it is a good idea to take a 'pitchfork' approach using both wasp species and *Amblyseius swirskii*.  
2 Blister packs are the preferred release method for *Eretmocerus* to ensure the best possible hatch rate of pupa, as *Eretmocerus* only hatches from one side of the pupa.

## Start Clean

Follow the best practice to isolate and inspect received plugs and cuttings.

Dipping of rooted and unrooted cuttings help to control pests and remove unwanted residues on incoming propagation stock.

## NemaShield®, Botanigard® WP and RootShield® PLUS+




Add layers of protection in young plants against a variety of insect pests and diseases.

## Plant Dipping Resource



## Learn More About Insect Control Solutions From BioWorks



PEST	BCA	RATE Units/m <sup>2</sup>	RATE Units/ft <sup>2</sup>	RELEASE STRATEGY	APPLICATION NOTES
 <b>TWO-SPOTTED SPIDER MITE (<i>Tetranychus urticae</i>)</b>	<i>Phytoseiulus persimilis</i>	6 – 8	0.6 – 0.8	Release when first spider mites are detected. Continue releasing for 4 weeks for better results.	Consider using indicator plants (bush beans) for biocontrol monitoring. Note: <i>Phytoseiulus persimilis</i> is not effective against Lewis mites.
	<i>Amblyseius californicus</i>	6 – 8	0.6 – 0.8		
 <b>THRIPS Western Flower Thrips (<i>Frankliniella occidentalis</i>); Chili Thrips (<i>Scirtothrips dorsalis</i>); Poinsettia thrips (<i>Echinothrips americanus</i>); and other species NOTE:<sup>3</sup></b>	<i>Amblyseius swirskii</i>	50 (when loose)	5 (when loose)	Introduce on rooted cuttings before transplant. Synchronize second introduction just prior to spacing.	Ensure good foliage coverage to guarantee a higher number of predatory mites ending up on each plant. A battery-operated blower can be used for better coverage and saving time.
		1 sachet/10 inches pot of Poinsettia or per stock plant			Ensure the sachets are in contact with plant foliage for better results.
	<i>Stratiolaelaps scimitus</i> (=Hypoaspis miles)	100	10	Release first on the organic substrate during propagation and repeat after planting to other containers containing organic material.	Release full rate during propagation. Release half rate after planting if full rate used during propagation. Both species can be mixed and applied together. Note: Both species do not do well in Oasis plug. In that situation apply after transplanting at full rate.
	<i>Dalotia coriaria</i> (=Atheta coriaria)	2	0.2		
<i>Steinernema feltiae</i> (NEMASHIELD®)	250K - 300K	25K - 30K	Apply during propagation.	Ensure a constant agitation/aeration of the suspension during application. Remove filters and keep a low pressure for best results. This product is also effective for the control of fungus gnats.	
 <b>APHID (<i>Aphis gossypii</i>; <i>Myzus persicae</i>; <i>M. nicotianae</i>) NOTE:<sup>4</sup></b>	<i>Aphidius colemani</i>	0.25 – 1.0	0.025 – 0.1	Release every week until control has been achieved.	Release at least once per week until control has been achieved.
	<i>Aphidoletes aphidimyza</i>	1	0.1	Release at first signs of aphid presence.	Keep as part of the aphid biocontrol strategy until control is achieved.
	<i>Chrysoperla</i> spp.	10 – 20	1 - 2	Use mainly as a hot spot control strategy.	Release for a knock-down effect on hot spots.
<p><sup>3</sup> Most thrips species do not develop well on Poinsettia crop as it is not a great host plant. Thrips damage early in the crop typically is a carry-over from previous crop and disappears as the crop matures. There is one thrips species that does develop in Poinsettia: <i>Echinothrips americanus</i>.</p> <p><sup>4</sup> It is very rare to see aphids in Poinsettia crops, but occasionally they do show up.</p>					