Start Clean by Dipping Unrooted Cuttings

It’s one thing to use biocontrol to manage pests in a greenhouse but it’s even better not to welcome them into the facility in the first place. Vineland has been instrumental in developing methods to dip plant cuttings in insecticidal oils or soaps, or biopesticides to kill pests. A lot of cuttings are not as clean as you would like them to be. Cutting producers do spray for pests during production, however, low levels of thrips can survive and are difficult to detect when they arrive in a facility.

Vineland researchers sampled chrysanthemum cuttings found that 84 percent of them contained one or two thrips per batch of 20 cuttings. Given the fact that thrips can lay up to 300 eggs in their lifetime, those small numbers can quickly get out of control.

Dipping unrooted cuttings into an oil, soap, or biopesticide significantly reduces the risk of pests hitching a ride onto planting stock. Our research showed that this technique will take care of 70 to 80 percent of thrips that come in and sets the clock back on pest population development for weeks, so growers can implement an effective biocontrol program.

Previously, we determined the best products and rates for maximum efficacy and minimal risk of phytotoxicity. To demonstrate the value of dips in an IPM program, several greenhouse trials were conducted. For both thrips on chrysanthemums, a clear difference was observed when cuttings were dipped before releasing biocontrol agents, compared to a regular biocontrol program (Figure 1).

![Thrips on chrysanthemum](image)

Figure 1. Greenhouse trials on western flower thrips to determine the value of adding unrooted cutting dips to a regular IPM program.
An accidental two-spotted spider mite infestation on chrysanthemums in the thrips greenhouse experiment allowed us to observe that cutting dips in oil-based products also seem to control this common pest.

A few technical tips to make dips of unrooted cuttings successful:

- Dip rates are lower than spray rates to prevent phytotoxicity. We only tested a few of the most common potted plant species and varieties. Do your own tests on a small batch before committing to a full dip program.
- We obtained optimum results for thrips with 0.1-0.5% (v/v) mineral oil (e.g. Landscape oil or SuffOil-X) or 2.5 g/L BotaniGard 22WP on various crops. Adjust the rate according to the sensitivity of the crop to oil-based products.
- Products used in dips work on contact with pests, so total coverage of the foliage is required. Do not pack the cuttings too tightly and check for dry spots after the cuttings are dipped.
- Good sanitation is essential. Although we have shown previously that the risk of disease (e.g. Erwinia/Pectobacterium) transfer through the dip is minimal, you are dipping a lot of cuttings in the same tank. That said, do not dip stressed cuttings as this may add additional strain and make cuttings more susceptible to pathogens or reduce their vigor in propagation.

Not sure how to dip? Check out this short video that explains the process step by step: [https://www.youtube.com/watch?v=OI9L62RdN9U&feature=youtu.be](https://www.youtube.com/watch?v=OI9L62RdN9U&feature=youtu.be) (Figure 2).

![Figure 2. Screenshot of cutting dip video.](https://www.youtube.com/watch?v=OI9L62RdN9U&feature=youtu.be)
The project was originally meant to give growers a better chance at succeeding with biological pest control, but dips also fit well within a pesticide-based program. One grower trial showed that dipping cuttings reduced pesticide application by 50%. In short, dip treatments of unrooted cuttings are effective against several pests on different crops, allowing growers to start clean, the best beginning for a successful IPM program.

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