



[Environment Horticulture Program Research Summaries](#)

IR-4 Environmental Horticulture Program SP3014 Crop Safety

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Abstract

SP3014 is a new insecticide being developed by SePro for the control of scales, mealybugs and other insects on environmental horticulture crops. The IR-4 Project completed 22 crop safety trials on 16 environmental horticulture plant species or genera during 2018 to 2021. In these trials, all 16 species or genera exhibited minimal or no injury. One species (*Impatiens walleriana*) exhibited minimal or no injury in 3 trials (Table 1) and 15 species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop (Table 4). When first registered, it may be possible to include these in the list of crops with no known adverse impact.

Introduction

SP3014 is a new insecticide being developed by SePro for the control of scales and mealybugs on environmental horticulture crops. The IR-4 Project completed 22 crop safety trials on 16 environmental horticulture plant species or genera during 2018 to 2021.

Materials and Methods

SP3014 was applied as foliar treatment typically 3 times at approximately 14 days intervals. The application rates were 10, 20 and 40 fl oz per 100 gal, plus a water treated control. A minimum of ten plants (replicate treatments) were required. Phytotoxicity was planned to be recorded on a scale of 0 to 10 (0 = no phytotoxicity; 10 = complete kill). Phytotoxicity was rated weekly up to 6 weeks after initial application. For IR-4 testing, the following protocols were used: 18-011, 19-011, 20-005 and 21-005. For more detailed materials and methods, including application rates for various products, please visit <https://www.ir4project.org/ehc/ehc-registration-support-research/env-hort-researcher-resources/#Protocols> to view and download these protocols.

SP3014 was supplied to researchers (See list of researchers in Appendix 1) by SePro.

Results and Summary

Based on the type and nature of injury seen with pesticide applications, tested plant species were placed into four categories: 1) no significant phytotoxicity or growth differences from the untreated check or any injury was transitory, 2) no or minimal transitory injury seen at the 1X rate, but the 2X and/or 4X rates did cause significant phytotoxicity, 3) significant injury at the 1X rate sufficient to recommend growers not utilize SP3014, and 4) more data are needed to make informed recommendations.

Phytotoxicity

Across all crops tested, SP3014 exhibited no or minimal negative impact on 16 plant species or genera. One species (*Impatiens walleriana*) exhibited minimal or no injury in 3 trials (Table 1) and 15 species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop (Table 4).

Please see Table 5 for a summary of the individual trial results.

Table 1. List of SP3014 treated crops with no or minimal transitory injury.

Impatiens walleriana

Table 2. List of SP3014 treated crops with no injury at 1X but significant injury at 2X or 4X.

None

Table 3. List of SP3014 treated crops with significant injury at 1X.

None

Table 4. List of SP3014 treated crops where more information is needed.

*Begonia semperflorens*¹

Chrysanthemum/Dendranthema sp.¹

*Chrysanthemum x morifolium*¹

*Dracaena indivisa*¹

Fuschia sp.¹

*Hydrangea macrophylla*¹

Hydrangea sp.¹

*Impatiens hawkeri*²

*Pelargonium x hortorum*¹

Petunia sp.²

Rosa sp.²

Tagetes sp.²

*Verbena x hybrida*¹

*Viola cornuta*¹

*Viola x wittrockiana*¹

¹ No injury in 1 trial

² No injury in 2 trials

Table 5. Detailed Summary of Crop Safety Testing with SP3014.

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 9/3/2021 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33246	Clubed Begonia (<i>Begonia semperflorens</i>) 'Harmony Scarlet'	Greenhouse	Hausbeck	MI	2019	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal applied 3 times weekly.
33242	Chrysanthemum, Garden (<i>Chrysanthemum/Dendranthema</i> sp.)	Greenhouse	Fraelich	GA	2021	Foliar	No injury or growth reduction with 10 and 20, minor at 40 fl oz per 100 gal applied 3 times weekly.
33242	Chrysanthemum, Garden (<i>Chrysanthemum/Dendranthema</i> sp.) C. x morifolium 'Daybreak Orange'	Greenhouse	Hausbeck	MI	2019	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + Capsil applied 3 times weekly.
33239	<i>Dracaena</i> (<i>Dracaena</i> sp.) <i>Dracaena indivisa</i>	Greenhouse	Vafaie	TX	2020	Foliar	No injury or significant growth reduction with 10, 20 and 40 fl oz per 100 gal + Capsil applied 3 times weekly.
33238	Fuschia; Ladies-Eardrops (<i>Fuschia</i> sp.) 'Dollar Princess'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.
33241	Hydrangea (<i>Hydrangea</i> sp.) H. macrophylla	Field Container	Uber	CA	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + Capsil applied 3 times weekly.
33241	Hydrangea (<i>Hydrangea</i> sp.) 'Nikko Blue'	Field Container	Wade	SC	2018	Foliar	No injury with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times weekly; all plants marketable.
33244	Impatiens, New Guinea (<i>Impatiens hawkeri</i>) 'Sonic Pink'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.
33244	Impatiens, New Guinea (<i>Impatiens hawkeri</i>) 'Magnum Orange'	Greenhouse	Vafaie	TX	2018	Foliar	No injury nor growth reduction with 10 and 20 fl oz per 100 gal applied twice.
33245	Impatiens, Common Garden; Buzzy Lizzy (<i>Impatiens walleriana</i>) 'Dazzler Orange'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.
33245	Impatiens, Common Garden; Buzzy Lizzy (<i>Impatiens walleriana</i>) 'Baby'	Greenhouse	Nansen	CA	2020	Foliar	No injury nor significant growth reduction with 0.8, 1.6 and 3.1 ml per liter applied 3 times weekly.
33245	Impatiens, Common Garden; Buzzy Lizzy (<i>Impatiens walleriana</i>) 'Super Elfin XP Violet'	Greenhouse	Vafaie	TX	2020	Foliar	No injury or significant growth reduction with 10, 20 and 40 fl oz per 100 gal + Capsil applied 3 times weekly.
33250	Geranium, Zonal (<i>Pelargonium x hortorum</i>) 'Ringo 2000 Deep Red'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.
33248	Petunia (<i>Petunia</i> sp.) 'Cascadias Rim Chianti'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.
33248	Petunia (<i>Petunia</i> sp.) 'Pretty Grand Purple'	Greenhouse	Vafaie	TX	2018	Foliar	No significant injury nor growth reduction with 10 and 20 fl oz per 100 gal applied twice.
33240	Rose (<i>Rosa</i> sp.) 'Iceberg White'	Field Container	Uber	CA	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + Capsil applied 3 times weekly.
33240	Rose (<i>Rosa</i> sp.) 'Caldwell Pink'	Field Container	Wade	SC	2018	Foliar	No injury with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times weekly; all plants marketable.
33243	Marigold (<i>Tagetes</i> sp.) 'Boy Orange'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33243	Marigold (Tagetes sp.) 'Inca II Yellow'	Greenhouse	Nansen	CA	2020	Foliar	No significant injury nor growth reduction with 0.8, 1.6 and 3.1 ml per liter applied 3 times weekly.
33247	Vervain (Verbena sp.) V. x hybrida 'Quartz XP Bordeaux'	Greenhouse	Hausbeck	MI	2019	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal applied 3 times weekly.
33252	Violet (Viola sp.) V. cornuta 'Viola Halo Violet'	Greenhouse	Vafaie	TX	2018	Foliar	No significant injury nor growth reduction with 10 and 20 fl oz per 100 gal applied twice.
33251	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Cool Wave Purple'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 10, 20 and 40 fl oz per 100 gal + NIS applied 3 times biweekly.

Label Suggestions

In this report, all plants exhibited no or minimal injury after foliar treatments of SP3014 at 10, 20 and 40 fl oz per 100 gal, suggesting that this active ingredient is safe to ornamental horticulture crops. Given the lack of phytotoxicity across so many different plant species and genera, it is suggested that all the 16 plants in Table 1 and Table 4 (listed below) that showed no injury be placed on the SP3014 label if SePro has similar results on these crops. Or a general statement can be placed on the label such as ‘has not been demonstrated to cause damage on various ornamental plant species according to labeled use instructions. SP3014 may be used on a wide number of crops but must be tested on a limited portion of the crop prior to applying to the whole crop if the grower has no previous experience applying SP3014 to that crop’.

Begonia semperflorens

Chrysanthemum/Dendranthema sp.

Chrysanthemum x morifolium

Dracaena indivisa

Fuschia sp.

Hydrangea macrophylla

Hydrangea sp.

Impatiens hawkeri

Impatiens walleriana

Pelargonium x hortorum

Petunia sp.

Rosa sp.

Tagetes sp.

Verbena x hybrida

Viola cornuta

Viola x wittrockiana

Appendix 1: Contributing Researchers

Mr. Ben Fraelich	USDA-ARS 2316 Rainwater Rd. P.O. Box 748 Tifton GA 31793
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Dr. Mary Hausbeck	Michigan State University Dept. of Plant Pathology 140 Plant Pathology Building East Lansing, MI 48824
Dr. Christian Nansen	University of California, Davis Department of Entomology and Nematology One Shields Avenue Davis CA 95616
Mr. Buzz Uber	Crop Inspection Service 31130 Hilltop Drive Valley Center, CA 92082
Dr. Erfan Vafaie	Texas A&M University Texas Agrilife Extension Service Overton TX 75684
Mr. Paul Wade	USDA-ARS US Vegetable Laboratory 2700 Savannah Highway Charleston SC 29414