Environment Horticulture Program Research Summaries

IR-4 Environmental Horticulture Program
SP2700 Crop Safety

Authors: Cristi L. Palmer and Ely Vea
Date: October 17, 2019

Acknowledgements
Susan Bierbrunner

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2015-34383-23710 with substantial cooperation and support from the State Agricultural Experiment Stations and USDA-ARS.

Table of Contents

Table of Tables

Abstract

SP2700 is a new insecticide being developed by SePro for the control of diseases on ornamentals such as *Alternaria, Cylindrocladium, Fusarium, Rhizoctonia,* and *Thielaviopsis.* The IR-4 Project completed 18 crop safety trials on 10 ornamental horticulture plant species or genera from 2018 through 2019. In these trials, two genera or species exhibited minimal or no injury after foliar applications in a minimum of 3 trials for each crop; these can be added to a list of tolerant plants in the new label for this active ingredient. All trials for 8 other species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop.

Introduction

SP2700 is a new insecticide being developed by SePro for the control of diseases on ornamentals such as *Alternaria*, *Cylindrocladium*, *Fusarium*, *Rhizoctonia*, and *Thielaviopsis*. The IR-4 Project completed 18 crop safety trials on 40 ornamental horticulture plant species or genera from 2018 through 2019.

Materials and Methods

SP2700 was applied as foliar treatment mixed with NIS typically thrice (3 times) at approximately 14 days intervals. The application rates were at 11, 22 and 44 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: 18-006, 18-007, 19-006 and 19-007. 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.

SP2700 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 three 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 afidopyrofen, and 4) more data are needed to make informed recommendations.

Phytotoxicity

Across all crops tested, SP2700 exhibited no or minimal negative impact on all plant species or genera. Two of these crops had the minimum number of 3 tests for definitive conclusion of crop safety (Table 1). No crop displayed significant injury with SP2700 (Tables 2 and 3). There are 8 species or genera where less than 3 trials were conducted so there is not enough information available at this time (Table 4). All trials for each of these crops showed no or minimal, transitory phytotoxicity.

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

Table 1. List of SP2700 treated crops with no or minimal transitory injury.

Hydrangea sp.
Petunia sp.

Table 2. List of SP2700 treated crops with no injury at 1X but significant injury at 2X or 4X.

None

Table 3. List of SP2700 treated crops with significant injury at 1X.

None

Table 4. List of SP2700 treated crops where more information is needed.

Fuschia sp. [1]
Impatiens hawkeri [1]
Impatiens walleriana [2]
Leucanthemum x superbum [2]
Pelargonium x hortorum [1]
Rosa sp. [2]
Tagetes sp. [2]
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 SP2700

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 3/19/2018 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33192	Fuschia; Ladies-Eardrops (Fuschia sp.) 'Dollar Princess'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly.
33207	Hydrangea (Hydrangea sp.) H. macrophylla	Field Container	Uber	CA	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly.
33207	Hydrangea (Hydrangea sp.) H. macrophylla 'Nikko Blue'	Field Container	Baysal-Gurel	TN	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times.
33207	Hydrangea (Hydrangea sp.) 'Nikko Blue'	Field Container	Wade	SC	2018	Foliar	No injury with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; all plants marketable.
33201	Impatiens, New Guinea (Impatiens hawkeri) 'Sonic Pink'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 11, minor with 22 and 44, fl oz per 100 gal applied 3 times biweekly; plants flowered normally.
33200	Buzzy Lizzy; Impatiens, Common Garden (Impatiens walleriana) 'Dazzler Orange'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 11, minor with 22 and 44, fl oz per 100 gal applied 3 times biweekly.
33200	Buzzy Lizzy; Impatiens, Common Garden (Impatiens walleriana) 'Impreza Cherry Splash'	Greenhouse	Catlin	NY	2018	Foliar	Virtually no injury with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; minor growth reduction at 4X.
33895	Daisy (Leucanthemum x superbum) 'Snow Lady'	Greenhouse	Freiberger	NJ	2019	Drench	No injury with 11, 22 and 44 fl oz per 100 gal; all plants grew and flowered normally.
33895	Daisy (Leucanthemum x superbum) 'Snow Lady'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; all plants grew and flowered normally.
33208	Geranium, Zonal (Pelargonium x hortorum) 'Ringo 2000 Deep Red'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; plants flowered normally.
33196	Petunia (Petunia sp.) 'Cascadias Rim Chianti'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury with 11, minor with 22 and 44 fl oz per 100 gal applied 3 times biweekly; no growth reduction.
33196	Petunia (Petunia sp.) P. x hybrida 'Carpet Velvet'	Greenhouse	Hand	OH	2018	Foliar	No injury or significant growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times.
33196	Petunia (Petunia sp.) 'Pretty Flora Midnight'	Greenhouse	Catlin	NY	2018	Foliar	No injury with 11 and 22, minor with 44 fl oz per 100 gal applied 3 times biweekly; no growth reduction.
33198	Rose (Rosa sp.) 'Iceberg White'	Field Container	Uber	CA	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly.
33198	Rose (Rosa sp.) 'Old Blush'	Field Container	Wade	SC	2018	Foliar	No injury with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; all plants marketable.
33194	Marigold (Tagetes sp.) 'Boy Orange'	Greenhouse	Freiberger	NJ	2018	Foliar	No injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; plants flowered normally.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33194	Marigold (Tagetes sp.) 'Inca II Orange'	Greenhouse	Catlin	NY	2018	Foliar	No injury with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; minor growth reduction at 4X.
33205	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Cool Wave Purple'	Greenhouse	Freiberger	NJ	2018	Foliar	No significant injury or growth reduction with 11, 22 and 44 fl oz per 100 gal applied 3 times biweekly; plants flowered normally.

Label Suggestions

In this report, two genera exhibited no or minimal injury after foliar treatments of SP2700 at 11, 22 and 44 fl oz per 100 gal. If tested crops will be listed on the label, these can be included in a future label:

Hydrangea sp.
Petunia sp.

Given the lack of phytotoxicity across so many different plant species and genera, it is suggested that 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. SP2700 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 SP2700 to that crop’.

Appendix 1: Contributing Researchers

Dr. Fulya Baysal-Gurel	Tennessee State University McMinnville, TN 37110
Mr. Tom Freiberger	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
Dr. Nora J. Catlin	Cornell Cooperative Extension 423 Griffing Avenue Riverhead, NY
Dr. Francisca Hand	Ohio State University Department of Plant Pathology 475C Kottman Hall Columbus, OH 43210
Mr. Buzz Uber	Crop Inspection Service 31130 Hilltop Drive Valley Center, CA92082
Mr. Paul Wade	USDA-ARS US Vegetable Laboratory 2700 Savannah Highway Charleston SC 29414