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IR-4 Ornamental Horticulture Program Mandestrobin Crop Safety

**Authors: Ely Vea and Cristi L. Palmer
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Acknowledgements Susan Bierbrunner

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Table of Contents

Table of Contents	2
Table of Tables	3
Abstract	4
Introduction.....	5
Materials and Methods.....	5
Results and Summary	5
Phytotoxicity	5
Label Suggestions	8
Appendix 1: Contributing Researchers	9

Table of Tables

Table 1.	List of Mandestrobin treated crops with no or minimal transitory injury.....	6
Table 2.	List of Mandestrobin treated crops with no injury at 1X but significant injury at 2X or 4X.....	6
Table 3.	List of Mandestrobin treated crops with significant injury at 1X.....	6
Table 4.	List of Mandestrobin treated crops where more information is needed.	6
Table 5	Detailed Summary of Crop Safety Testing with Mandestrobin.....	7

Abstract

Mandestrobin is a new systemic and translaminar fungicide being developed by Syngenta for the control of Botrytis and other foliar diseases of ornamental horticulture crops. The IR-4 Project completed 18 crop safety trials on 17 ornamental horticulture plant species or genera during 2015 to 2017. In these trials, all 17 species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop; Syngenta can consider adding these to the label.

Introduction

Mandestrobin is a new systemic and translaminar fungicide being developed by Valent for the control of Botrytis and other foliar diseases of ornamental horticulture crops. The IR-4 Project completed 18 crop safety trials on 17 ornamental horticulture plant species or genera during 2015 to 2017.

Materials and Methods

Mandestrobin was applied as foliar treatment typically 3 times at approximately 14 days intervals. The application rates were 7.5, 15 and 30 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: 15-003 and 16-004 and 17-004. For more detailed materials and methods, including application rates for various products, please visit <http://ir4.rutgers.edu/ornamental/OrnamentalDrafts.cfm> to view and download these protocols.

Mandestrobin was supplied to researchers (See list of researchers in Appendix 1) by Valent.

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 Mandestrobin, and 4) more data is needed to make informed recommendations.

Phytotoxicity

Across all crops tested, Mandestrobin exhibited no or minimal negative impact on all plant species or genera. However none of these crops had the minimum number of 3 tests for definitive conclusion of crop safety. There are 17 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 Mandestrobin treated crops with no or minimal transitory injury.

None

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

None

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

None

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

Alyssum montanum.¹

Alyssum sp.¹

*Antirrhinum majus*¹

*Begonia semperflorens*¹

Begonia sp.¹

Calibrachoa sp.¹

*Chamaerops humilis*¹

*Chrysanthemum/Dendranthema x morifolium*¹

Coreopsis sp.¹

Dianthus sp.²

*Euphorbia pulcherrima*¹

*Impatiens hawkeri*¹

Lupinus sp.¹

*Pelargonium x hortorum*¹

*Petunia hybrida*¹

Salvia sp.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 Mandestrobin.

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 5/31/2018 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33061	Madwort (Alyssum sp.) A. montanum	Shadehouse/Lathehouse	Klett	CO	2017	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32422	Madwort (Alyssum sp.) 'Clear Crystal Lavender'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32392	Garden Snapdragon (Antirrhinum majus) 'Rocket Mix'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32389	Begonia (Begonia sp.) B. semperflorens 'Bada Bing'	Greenhouse	Hausbeck	MI	2016	Foliar	No leaf injury, slight to moderate flower bleaching, with 7.5, 15 and 30 fl oz per 100 gal applied 3 times; no growth reduction.
33059	Begonia (Begonia sp.) 'Summerwings Rose'	Shadehouse/Lathehouse	Klett	CO	2017	Foliar	No injury or significant growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
33060	Calibrachoa (Calibrachoa sp.) Minifamous Double Amethyst	Shadehouse/Lathehouse	Klett	CO	2017	Foliar	No injury or significant growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
33073	Palm, Mediterranean Fan (Chamaerops humilis)	Field Container	Palmateer	FL	2016	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32396	Hardy Mum (Chrysanthemum/Dendranthema x morifolium) 'Snow Lady'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32419	Tickseed (Coreopsis sp.) 'Early Sunrise Yellow'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32423	Pink (Dianthus sp.) 'Bouquet Rose Magic'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
33062	Pink (Dianthus sp.) Dianthus SCENT FIRST POT Coral Reef	Shadehouse/Lathehouse	Klett	CO	2017	Foliar	No injury with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32385	Poinsettia (Euphorbia pulcherrima) 'Jubilee Red'	Greenhouse	Freiberger	NJ	2016	Foliar	No injury, growth reduction or delayed blooming with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32386	Impatiens, New Guinea (Impatiens hawkeri) 'Harmony Deep Red'	Greenhouse	Bodine	NJ	2015	Foliar	No significant injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32424	Lupine (Lupinus sp.) 'Gallery Mix'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32390	Geranium, Zonal (Pelargonium x hortorum) 'Maverick Violet'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32391	Petunia (Petunia sp.) Petunia x hybrida 'Dreams Midnight'	Greenhouse	Uber	CA	2017	Foliar	No injury with 7.5 fl oz, minor injury with 15 and 30 fl oz per acre applied 3 times biweekly; no growth reduction.
32421	Sage (Salvia sp.) 'New Dimension Blue'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.
32420	Wittrock's Violet; Pansy (Viola x wittrockiana) 'Delta Orange Blotch'	Greenhouse	Bodine	NJ	2015	Foliar	No injury or growth reduction with 7.5, 15 and 30 fl oz per 100 gal applied 3 times.

Label Suggestions

In this report, all plants exhibited no or minimal injury after foliar treatments of Mandestrobin at 7.5, 15 and 30 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 17 plants in Table 4 (listed below) that showed no injury be placed on the Mandestrobin label if Syngenta 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. Mandestrobin 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 Mandestrobin to that crop’.

Alyssum montanum

Alyssum sp.

Antirrhinum majus

Begonia semperflorens

Begonia sp.

Calibrachoa sp.

Chamaerops humilis

Chrysanthemum/Dendranthema x morifolium

Coreopsis sp.

Dianthus sp.

Euphorbia pulcherrima

Impatiens hawkeri

Lupinus sp.

Pelargonium x hortorum

Petunia hybrida

Salvia sp.

Viola x wittrockiana

Appendix 1: Contributing Researchers

Mr. Dave Bodine	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
Mr. Tom Freiberger	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
Dr. Mary Hausbeck Mr. Blair Harlan	Michigan State University Dept. of Plant Pathology 140 Plant Pathology Building East Lansing, MI 48824 517-355-4534
Dr. Jim Klett	Colorado State University Department of Horticulture and Landscape Architecture Fort Collins, CO 80423
Dr. Aaron Palmateer	University of Florida Tropical Research & Education Center 18905 SW 280 Street Homestead, FL 33031
Mr. Buzz Uber	Crop Inspection Service 31130 Hilltop Drive Valley Center, CA 92082