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## **IR-4 Ornamental Horticulture Program Overture (PyridalyI) Crop Safety**

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Date: May 28, 2014**

### **Acknowledgements**

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## **Abstract**

Pyridalyl was registered as Overture for use on ornamental horticulture plants in greenhouses with foliar applications in the United States in 2008. The label recommends use on ornamental horticulture plants with testing by the grower. From 2010 to 2013, the IR-4 Project conducted 46 trials on 13 ornamental plant species examining phytotoxicity related to Overture applications. In these trials, no injury was noted.

## Introduction

Pyridalyl was registered as Overture for use on ornamental horticulture plants in greenhouses with foliar applications in the United States in 2008. The label recommends use on ornamental horticulture plants with testing by the grower. From 2010 to 2011, the IR-4 Project conducted 34 trials on 10 ornamental plant species examining phytotoxicity related to Overture applications.

## Materials and Methods

Overture was tested as foliar treatment typically three times at approximately 14 days interval or as a single drench application. The foliar application rates were 8, 16 and 32 oz per 100 gal applied foliar transplanting. A minimum of three plants (replicate treatments) were required with most researchers exceeding this minimum. Phytotoxicity was recorded on a scale of 0 to 10 (0 = No phytotoxicity; 10 = Complete kill) one to four times from 1 to 8 weeks after initial application. For IR-4 testing, the following protocols were used: 10-004 and 11-016. 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.

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

## Results and Summary

### *Phytotoxicity*

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 sufficient to recommend growers not utilize spirotetramat, and 4) more data is needed to make informed recommendations.

No injury or minimal transient injury was observed for all tested crops.

Please see Table 3 for a summary of the individual trial results.

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

<i>Begonia sp.</i>	<i>Petunia sp.</i>
<i>Chrysanthemum</i>	<i>Tagetes sp.</i>
<i>Gerbera sp.</i>	<i>Verbena sp.</i>
<i>Impatiens sp.</i>	<i>Zinnia sp.</i>

**Table 2. List of Overture treated crops where more information is needed.**

<i>Angelonia</i> <sup>1</sup>	<i>Fuschia sp.</i> <sup>1</sup>
<i>Dianthus sp.</i> <sup>1</sup>	<i>Viola sp.</i> <sup>1</sup>

<sup>1</sup> No injury in 1 trial.

**Table 3 Detailed Summary of Crop Safety Testing with Overture (pyridalyl)**

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 5/27/2014 are listed below.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	Trial State	Trial Year	Application Type	Results
30182	Overture 35WP (Pyridalyl)	Angelonia (Angelonia angustifolia) 'Adessa Pink'	Greenhouse	Freiberger	NJ	2013	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal mixed with surfactant applied 3 times.
30387	Overture 35WP (Pyridalyl)	Begonia (Begonia sp.)	Field Container	Davis	MI	2010	Foliar	No significant injury at 8, 16, and 32 fl oz per 100 gal.
29307	Overture 35WP (Pyridalyl)	Begonia (Begonia sp.) B. x semperflorens-cultorum 'Cocktail Rum'	Greenhouse	Gilrein	NY	2011	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal.
29307	Overture 35WP (Pyridalyl)	Begonia (Begonia sp.) B. x semperflorens-cultorum 'Eureka GL White'	Greenhouse	Gilrein	NY	2011	Foliar	No injury or growth reduction with 8 and 16, moderate injury (necrotic leaf spotting) with 32 oz per 100 gal.
29307	Overture 35WP (Pyridalyl)	Begonia (Begonia sp.) 'Dragon Wing Red'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29307	Overture 35WP (Pyridalyl)	Begonia (Begonia sp.) 'Non-stop Orange'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
30537	Overture 35WP (Pyridalyl)	Chrysanthemum, Garden (Chrysanthemum/Dendranthema sp.) 'Outrageous Orange'	Greenhouse	Gilrein	NY	2012	Foliar	No injury on foliage or flowers at 8, 16, and 32 fl oz per 100 gal applied biweekly 3 times.
30537	Overture 35WP (Pyridalyl)	Chrysanthemum, Garden (Chrysanthemum/Dendranthema sp.) 'Sly Jenna'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
30537	Overture 35WP (Pyridalyl)	Chrysanthemum, Garden (Chrysanthemum/Dendranthema sp.) 'Sparkle White'	Greenhouse	Gilrein	NY	2012	Foliar	No injury on foliage or flowers at 8, 16, and 32 fl oz per 100 gal applied biweekly 3 times.
30537	Overture 35WP (Pyridalyl)	Chrysanthemum, Garden (Chrysanthemum/Dendranthema sp.) Tanacetum x grandiflorum	Greenhouse	Cloyd	IL	2012	Foliar	No injury with 8, 10 and 12 fl oz per 100 gal.
30592	Overture 35WP (Pyridalyl)	Pinks (Dianthus sp.) 'Floral Lace Crimson'	Greenhouse	Freiberger	NJ	2013	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal mixed with surfactant applied 3 times.
29308	Overture 35WP (Pyridalyl)	Fuschia, Ladies-Eardrops (Fuschia sp.) Fuschia x hybrida	Greenhouse	Cloyd	IL	2012	Foliar	No injury with 8 and 10 fl oz per 100 gal.
29309	Overture 35WP (Pyridalyl)	Transvaal Daisy (Gerbera sp.) 'Festival Lt. Eye Orange'	Greenhouse	Edmunds	CO	2010	Foliar	No injury at 8 oz, minor flower injury (slight yellowing) at 16 and 32 oz per 100 gal after 3rd application; application residue at higher rates.
29309	Overture 35WP (Pyridalyl)	Transvaal Daisy (Gerbera sp.) 'Jaguar Pink'	Greenhouse	Gilrein	NY	2012	Foliar	No injury on foliage or flowers with 8, 16, and 32 oz per 100 gal applied biweekly three times.
29309	Overture 35WP (Pyridalyl)	Transvaal Daisy (Gerbera sp.) 'Royal Red'	Greenhouse	Gilrein	NY	2012	Foliar	No injury on foliage or flowers with 8, 16, and 32 oz per 100 gal applied biweekly three times.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	Trial State	Trial Year	Application Type	Results
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Dazzler Violet'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Infinity Salmon Glow'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Paradise Pearl White'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Patchwork Salmon'	Greenhouse	Chen	LA	2011	Foliar	No significant injury or growth reduction with 8, 16 and 32 oz per 100 gal applied twice.
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Sonic Lilac'	Greenhouse	Chen	LA	2011	Foliar	No significant injury or growth reduction with 8, 16 and 32 oz per 100 gal applied twice.
29311	Overture 35WP (Pyridalyl)	New Guinea Impatiens (Impatiens New Guinea hybrids) 'Super Elfin Red'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
29310	Overture 35WP (Pyridalyl)	Balsam (Impatiens sp.) 'Cherry Splash'	Greenhouse	Gilrein	NY	2012	Foliar	No injury at 8, 16, and 32 oz per 100 gal applied biweekly three times.
29310	Overture 35WP (Pyridalyl)	Balsam (Impatiens sp.) 'Double Camellia Mix'	Greenhouse	Freiberger	NJ	2011	Foliar	Virtually no injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29310	Overture 35WP (Pyridalyl)	Balsam (Impatiens sp.) 'Extra Dwarf Tom Thumb'	Greenhouse	Freiberger	NJ	2011	Foliar	Virtually no injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
30388	Overture 35WP (Pyridalyl)	Balsam (Impatiens sp.) I. walleriana 'Dazzler Pink'	Field Container	Davis	MI	2010	Foliar	No significant injury at 8, 16, and 32 fl oz per 100 gal.
29310	Overture 35WP (Pyridalyl)	Balsam (Impatiens sp.) 'Super Elfin XP Red'	Greenhouse	Gilrein	NY	2012	Foliar	No injury at 8, 16, and 32 oz per 100 gal applied biweekly three times.
29312	Overture 35WP (Pyridalyl)	Petunia (Petunia sp.) 'Dolcissima Flambe'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29312	Overture 35WP (Pyridalyl)	Petunia (Petunia sp.) 'Easy Wave Rose'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
30389	Overture 35WP (Pyridalyl)	Petunia (Petunia sp.) P. x hybrida 'Prism Sunshine'	Field Container	Davis	MI	2010	Foliar	No significant injury at 8, 16, and 32 fl oz per 100 gal.
29312	Overture 35WP (Pyridalyl)	Petunia (Petunia sp.) 'Wave Purple Hybrid'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29313	Overture 35WP (Pyridalyl)	Marigold (Tagetes sp.) 'Marvel Orange'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
30390	Overture 35WP (Pyridalyl)	Marigold (Tagetes sp.) T. erecta 'Inca Orange'	Field Container	Davis	MI	2010	Foliar	No significant injury at 8, 16, and 32 fl oz per 100 gal.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	Trial State	Trial Year	Application Type	Results
29313	Overture 35WP (Pyridalyl)	Marigold (Tagetes sp.) 'Taishan Orange'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
29313	Overture 35WP (Pyridalyl)	Marigold (Tagetes sp.) 'Taishan Yellow'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
29313	Overture 35WP (Pyridalyl)	Marigold (Tagetes sp.) 'Tiger Eyes'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29314	Overture 35WP (Pyridalyl)	Vervain (Verbena sp.) 'Homestead Purple'	Greenhouse	Chen	LA	2010	Foliar	No injury with 8,16 and 32 oz per 100 gal applied twice; growth reduction at 4X; noticeable white spray deposits.
29314	Overture 35WP (Pyridalyl)	Vervain (Verbena sp.) 'Quartz x P Scarlet'	Greenhouse	Edmunds	CO	2010	Spray-to-wet	No injury at 8,16 and 32 oz per 100 gal; application residue at higher rates.
29314	Overture 35WP (Pyridalyl)	Vervain (Verbena sp.) 'Serenity Pink'	Greenhouse	Chen	LA	2010	Foliar	No injury with 8,16 and 32 oz per 100 gal applied twice; growth reduction at 4X; noticeable white spray deposits.
29314	Overture 35WP (Pyridalyl)	Vervain (Verbena sp.) V. hybrida 'Obsession Blue with Eye'	Greenhouse	Gilrein	NY	2011	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal.
29314	Overture 35WP (Pyridalyl)	Vervain (Verbena sp.) V. hybrida 'Quartz White'	Greenhouse	Gilrein	NY	2011	Foliar	No injury or growth reduction with 8, 16 and 32 oz per 100 gal.
29315	Overture 35WP (Pyridalyl)	Pansy (Viola sp.) 'Dynamite Scarlet'	Greenhouse	Chen	LA	2010	Foliar	No injury or growth reduction with 8,16 and 32 oz per 100 gal applied twice; noticeable white spray deposits.
29316	Overture 35WP (Pyridalyl)	Zinnia (Zinnia sp.) 'Elegans Envy'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29316	Overture 35WP (Pyridalyl)	Zinnia (Zinnia sp.) 'Magellan Coral'	Greenhouse	Edmunds	CO	2010	Spray-to-wet	Minor injury (leaf chlorosis) with recovery in 14 days at 8, 16 and 32 oz per 100 gal; application residue at higher rates.
29316	Overture 35WP (Pyridalyl)	Zinnia (Zinnia sp.) 'Profusion Knee-high Yellow'	Greenhouse	Chen	LA	2011	Foliar	No significant injury or growth reduction with 8, 16 and 32 oz per 100 gal applied twice
29316	Overture 35WP (Pyridalyl)	Zinnia (Zinnia sp.) 'Red Spider'	Greenhouse	Freiberger	NJ	2011	Foliar	No injury with 8, 16 and 32 oz per 100 gal + surfactant applied 3 times.
29316	Overture 35WP (Pyridalyl)	Zinnia (Zinnia sp.) 'Zahra White'	Greenhouse	Chen	LA	2011	Foliar	No significant injury or growth reduction with 8, 16 and 32 oz per 100 gal applied twice



## **Label Suggestions**

No label recommendations are made at this time.

## Appendix 1: Contributing Researchers

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