



[Environment Horticulture Program Research Summaries](#)

## **IR-4 Environmental Horticulture Program Pydiflumetofen + Difenconazole Crop Safety**

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## Abstract

Pydiflumetofen + Difenoconazole is a new fungicide being developed for the control of foliar diseases of environmental (aka ornamental) horticulture crops. The IR-4 Project completed 24 crop safety trials on 11 environmental horticulture plant species or genera during 2019 to 2020. In these experiments, no injury was observed across crops. It is recommended that three crops exhibiting no injury be added to the label: *Chrysanthemum/Dendranthemum sp*, *Impatiens hawkeri*, and *Viola wittrockiana*.

## Introduction

Pydiflumetofen + Difenoconazole is a new fungicide being developed for the control of foliar diseases of environmental horticulture crops. The IR-4 Project completed 24 crop safety trials on 11 environmental horticulture plant species or genera during 2019 to 2020.

## Materials and Methods

Pydiflumetofen + Difenoconazole was applied as a foliar treatment typically 3 times at approximately 14 days intervals or as a single drench treatment. The application rates were 14, 28 and 56 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: 19-006, 19-007, 20-011 and 20-012. 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.

Pydiflumetofen + Difenoconazole was supplied to researchers (See list of researchers in Appendix 1) by Syngenta.

## 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 Pydiflumetofen + Difenoconazole, and 4) more data is needed to make informed recommendations.

### Phytotoxicity

For three crops, no injury was observed in three trials, combining foliar and drench applications (Table 1). Across remaining eight tested crops, Pydiflumetofen + Difenoconazole exhibited no or minimal negative impact (Table 4.).

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

**Table 1. List of Pydiflumetofen + Difenoconazole treated crops with no or minimal transitory injury.**

*Chrysanthemum/Dendranthema* sp  
*Impatiens hawkeri*  
*Viola x wittrockiana*

**Table 2. List of Pydiflumetofen + Difenoconazole treated crops with no injury at 1X but significant injury at 2X or 4X.**

None

**Table 3. List of Pydiflumetofen + Difenoconazole treated crops with significant injury at 1X.**

None

**Table 4. List of Pydiflumetofen + Difenoconazole treated crops where more information is needed.**

<i>Begonia semperflorens</i> <sup>1</sup>	<i>Pelargonium x hortorum</i> <sup>1</sup>
<i>Calibrachoa</i> sp. <sup>1</sup>	<i>Petunia hybrida</i> <sup>1</sup>
<i>Celosia</i> sp.	<i>Rosa</i> sp. <sup>1</sup>
<i>Hydrangea</i> sp. <sup>1</sup>	
<i>Impatiens walleriana</i> <sup>1</sup>	

<sup>1</sup> No injury in 2 trials

**Table 5 Detailed Summary of Crop Safety Testing with Pydiflumetofen + Difenconazole.**

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 6/22/2021 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33891	Clubed Begonia ( <i>Begonia semperflorens</i> ) 'Dragon Wing Red'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33891	Clubed Begonia ( <i>Begonia semperflorens</i> ) 'Dragon Wing Red'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
33893	Calibrachoa ( <i>Calibrachoa</i> sp.) 'Noa Blue Legend'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33893	Calibrachoa ( <i>Calibrachoa</i> sp.) 'Blue Legend'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
33887	Cockscomb, Wool Flower ( <i>Celosia</i> sp.) 'Castle Scarlet'	Greenhouse	Catlin	NY	2020	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times. May be unacceptable spray residue at 4X.
34131	Chrysanthemum, Garden ( <i>Chrysanthemum/Dendranthema</i> sp.) 'Gold Rush Yellow'	Field Container	Catlin	NY	2020	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
34131	Chrysanthemum, Garden ( <i>Chrysanthemum/Dendranthema</i> sp.) 'Rhinos Orange'	Field Container	Klett	CO	2020	Drench	No injury or growth reduction, and no effect on flower production or bloom time, with 14, 28 and 56 fl oz per 100 gal applied once.
34131	Chrysanthemum, Garden ( <i>Chrysanthemum/Dendranthema</i> sp.) 'Rhinos Orange'	Field Container	Klett	CO	2020	Foliar	No injury or growth reduction, and no effect on flower production or bloom time, with 14, 28 and 56 fl oz per 100 gal applied 3 times biweekly.
34133	Hydrangea ( <i>Hydrangea</i> sp.) H. macrophylla 'Nikko Blue'	Field Container	Baysal-Gurel	TN	2020	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times biweekly.
34133	Hydrangea ( <i>Hydrangea</i> sp.) 'Wee-White' & 'Mini-Mauvette'	Field Container	Hausbeck	MI	2020	Foliar	No injury or adverse effects on crop growth and flower development with 14, 28 and 56 fl oz per 100 gal applied twice biweekly.
33885	Impatiens, New Guinea ( <i>Impatiens hawkeri</i> ) 'Divine Pink'	Greenhouse	Catlin	NY	2020	Foliar	No injury with 14, 28 and 56 fl oz per 100 gal after 2nd application, moderate to severe increasing with rates after 3rd application; no to minor growth reduction. Unacceptable spray residue at 4X.
33885	Impatiens, New Guinea ( <i>Impatiens hawkeri</i> ) 'Harmony Violet'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33885	Impatiens, New Guinea ( <i>Impatiens hawkeri</i> ) 'Harmony Violet'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.

33886	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Super Elfin Bright Orange'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33886	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Super Elfin Bright Orange'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
33889	Geranium, Zonal (Pelargonium x hortorum) 'Patriot White Imp.'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33889	Geranium, Zonal (Pelargonium x hortorum) 'Patriot White Imp.'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
33884	Petunia (Petunia hybrida) 'Dream Rose Picotee'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33884	Petunia (Petunia hybrida) 'Dream Rose Picotee'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.
34130	Rose (Rosa sp.)	Field Container	Baysal-Gurel	TN	2020	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times biweekly.
34130	Rose (Rosa sp.) 'Red Drift' & 'Pink Drift'	Field Container	Hausbeck	MI	2020	Foliar	No injury or adverse effects on crop growth and flower development with 14, 28 and 56 fl oz per 100 gal applied twice biweekly.
33883	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Matrix Purple'	Greenhouse	Catlin	NY	2020	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times. Unacceptable spray residue at 4X.
33883	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Delta Pure Yellow'	Greenhouse	Freiberger	NJ	2019	Drench	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal.
33883	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Delta Pure Yellow'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 14, 28 and 56 fl oz per 100 gal applied 3 times.



## Label Suggestions

In this report, all plants exhibited no or minimal injury after drench or foliar treatments of Pydiflumetofen + Difenoconazole at 14, 28 and 56 fl oz per 100 gal, suggesting that this active ingredient is safe to environmental horticulture crops. Given the lack of phytotoxicity, it is suggested that the three plants in Table 1 (listed below) that showed no injury be placed on the Pydiflumetofen + Difenoconazole 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 environmental plant species according to labeled use instructions. Pydiflumetofen + Difenoconazole may be used on a wide number of crops, but it 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 Pydiflumetofen + Difenoconazole to that crop'.

*Chrysanthemum/Dendranthema* sp.

*Impatiens hawkeri*

*Viola x wittrockiana*

## Appendix 1: Contributing Researchers

Dr. Fulya Baysal-Gurel	Tennessee State University Otis L. Floyd Research Center 472 Cadillac Lane McMinnville, TN 37110
Dr. Nora Catlin	Cornell Cooperative Extension 423 Griffing Avenue Riverhead NY 11901
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