



[Environment Horticulture Program Research Summaries](#)

## **IR-4 Environmental Horticulture Program IKF-309 Crop Safety**

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### **Acknowledgements**

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## Abstract

IKF-309 is a new fungicide being developed by ISK for the control of powdery mildew on environmental horticulture crops. The IR-4 Project completed 18 crop safety trials on 12 environmental horticulture plant species or genera during 2018 to 2021. In these trials, all 12 species or genera exhibited minimal or no injury. One species (*Pelargonium x hortorum*) exhibited minimal or no injury in 3 trials (Table 1) and 11 species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop. When first registered, it may be possible to include these in the list of crops with no known adverse impact.

## Introduction

IKF-309 is a new fungicide being developed by ISK for the control of powdery mildew on environmental horticulture crops. The IR-4 Project completed 18 crop safety trials on 12 environmental horticulture plant species or genera during 2018 to 2021.

## Materials and Methods

IKF-309 was applied as foliar sprays typically 3 times at approximately 14 days intervals. The application rates were 5, 10 and 20 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: 17-018, 19-006, 20-011 and 21-011. 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.

IKF-309 was supplied to researchers (See list of researchers in Appendix 1) by ISK.

## 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, IKF-309 exhibited no or minimal negative impact on 12 plant species or genera. One species (*Pelargonium x hortorum*) exhibited minimal or no injury in 3 trials (Table 1) and 11 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 IKF-309 treated crops with no or minimal transitory injury.**

*Pelargonium x hortorum*<sup>1</sup>

**Table 2. List of IKF-309 treated crops with no injury at 1X but significant injury at 2X or 4X.**

None

**Table 3. List of IKF-309 treated crops with significant injury at 1X.**

None

**Table 4. List of IKF-309 treated crops where more information is needed.**

*Begonia sp*<sup>2</sup>

*Dianthus gratianopolitanus*<sup>2</sup>

*Euphorbia pulcherrima*<sup>1</sup>

*Impatiens hawkeri*<sup>1</sup>

*Impatiens walleriana*<sup>1</sup>

*Petunia x hybrida*.<sup>2</sup>

*Salvia nemorosa*<sup>1</sup>

*Solenostemon sp.*<sup>1</sup>

*Tagetes erecta*<sup>1</sup>

*Tagetes patula*<sup>1</sup>

*Viola x wittrockiana*<sup>1</sup>

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

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

**Table 5. Detailed Summary of Crop Safety Testing with IKF-309.**

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 11/15/2021 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33693	Begonia (Begonia sp.) 'Babywing White'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33693	Begonia (Begonia sp.) 'Bada Boom Bronze Leaf Rose'	Greenhouse	Gu	TX	2020	Foliar	No significant injury with 5 and 10, minor with 20 fl oz per 100 gal applied 3 times biweekly.
33696	Cheddar Pink (Dianthus gratianopolitanus) 'Grandiflorus'	Greenhouse	Bodine	NJ	2020	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times biweekly.
33696	Cheddar Pink (Dianthus gratianopolitanus) "Firewitch"	Greenhouse	Fraelich	GA	2021	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times biweekly. All plants marketable.
34455	Poinsettia (Euphorbia pulcherrima) 'Prestige Red-13C'	Greenhouse	Gu	MS	2020	Foliar	No significant injury with 5, 10 and 20 fl oz per 100 gal applied 3 times biweekly.
33700	Impatiens, New Guinea (Impatiens hawkeri) 'Harmony Violet'	Greenhouse	Freiberger	NJ	2019	Foliar	No significant injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33701	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Super Elfin Bright Orange'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33698	Geranium, Zonal (Pelargonium x hortorum) 'Patriot Bright Red'	Greenhouse	Freiberger	NJ	2019	Foliar	No significant injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33698	Geranium, Zonal (Pelargonium x hortorum) 'Tango Pink Ice-34C'	Greenhouse	Gu	TX	2020	Foliar	No significant injury with 5, 10 and 20 fl oz per 100 gal applied 3 times biweekly.
33698	Geranium, Zonal (Pelargonium x hortorum)	Greenhouse	Saha	MI	2021	Foliar	Minor injury with 5, 10 and 20 fl oz per 100 gal. No growth reduction.
33705	Petunia (Petunia x hybrida) 'Duvet White'	Greenhouse	Freiberger	NJ	2019	Foliar	No significant injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33705	Petunia (Petunia x hybrida) 'Mamboo GP Blue-144C'	Greenhouse	Gu	TX	2020	Foliar	No significant injury with 5 and 10, minor with 20 fl oz per 100 gal applied 3 times biweekly.
33707	Woodland Sage (Salvia nemorosa) 'Haeumanarc'	Field Container	Fraelich	GA	2019	Foliar	No significant injury or growth reduction with 5, 10 and 20 fl oz per 100 gal + Dyne-Amic applied 3 times biweekly; treated plants marketable.
33695	Coleus (Solenostemon sp.) 'Wizard Select Mix-144C'	Greenhouse	Gu	TX	2020	Foliar	No significant injury with 5, minor with 10 and 20 fl oz per 100 gal applied 3 times biweekly.
33702	Marigold, African (Tagetes erecta) 'Taishan Gold'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33703	Marigold, French (Tagetes patula) 'Little Hero Yellow'	Greenhouse	Freiberger	NJ	2019	Foliar	No significant injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33704	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Delta Pure Yellow'	Greenhouse	Freiberger	NJ	2019	Foliar	No injury or growth reduction with 5, 10 and 20 fl oz per 100 gal applied 3 times.
33704	Pansy, Large Flowering; Wittrock's Violet (Viola X wittrockiana) 'Ultima Morpho-288C'	Greenhouse	Gu	TX	2020	Foliar	No significant injury with 5 and 10, minor with 20 fl oz per 100 gal applied 3 times biweekly.

## **Label Suggestions**

In this report, all plants exhibited no or minimal injury after foliar treatments of IKF-309 at 5, 10 and 20 fl oz per 100 gal, suggesting that this active ingredient is safe to environmental 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 that showed no injury be placed on the IKF-309 label if ISK 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 horticulture plant species according to labeled use instructions. IKF-309 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 IKF-309 to that crop'.



## Appendix 1: Contributing Researchers

Mr. Dave Bodine	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
Mr. Ben Fraelich	USDA-ARS 2316 Rainwater Rd. P.O. Box 748 Tifton GA 31793
Mr. Tom Freiberger	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
Dr. Meng-Meng Gu	Texas AgriLife Department of Horticulture Science 2134 TAMU College Station, TX 77843
Dr. Debalina Saha	Michigan State University Dept. of Horticulture Plant and Soil Sciences Building 1066 Bogue Street East Lansing, MI 48824