



[Environment Horticulture Program Research Summaries](#)

IR-4 Environmental Horticulture Program Isocycloseram (Vykenda) Crop Safety

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Abstract

Isocycloseram (Vykenda insecticide/miticide) is a new insecticide being developed by Syngenta for management of scale, mealybugs, thrips, beetles and other pests on environmental horticulture crops. The IR-4 Project completed 51 crop safety specific trials on 18 environmental horticulture plant species or genera during 2020 to 2025. In these trials, 15 species or genera exhibited minimal or no injury. Nine species or genera exhibited minimal or no injury in at least three trials and six additional species or genera exhibited minimal or no injury in a limited number of trials (one or two) for each crop.

Introduction

Isocycloseram (Vykenda) is a new insecticide developed by Syngenta for the management of red-headed flea beetles, mealybugs, thrips, beetles and other pests on environmental horticulture crops. The IR-4 Project completed 51 crop safety specific trials on 18 environmental horticulture plant species or genera during 2020 to 2025.

Materials and Methods

Isocycloseram was applied as foliar treatment typically 2 to 3 times at approximately 14-day intervals. The application rates were 11.5 (1X), 23 (2X) and 46 (4X) fl. oz per 100 gal, plus a water treated control. A minimum of ten plants (replicate treatments) were required. Phytotoxicity was recorded on a scale of 0 to 10 (0 = no phytotoxicity; 10 = complete kill). Phytotoxicity was generally rated weekly up to 6 weeks after initial application. For IR-4 testing, the following protocols were used: 20-005, 21-005, 22-007, 23-007, 24-004 and 25-004. For more detailed materials and methods, including application rates for various products, please visit [Research Resources Webpage](#) to view and download these protocols.

Isocycloseram 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 in at least one trial, and 4) more data are needed to make informed recommendations.

Phytotoxicity

Across all crops tested, isocycloseram exhibited no or minimal negative impact on 15 plant species or genera. Nine crops exhibited minimal or no injury in at least three trials (Table 1) and one species or genera exhibited varying results, with four of five trials exhibiting no negative impact (Table 3). Seven 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 isocycloseram treated crops with no or minimal transitory injury in at least 3 trials.

<i>Euphorbia pulcherrima</i>
<i>Gerbera sp.</i>
<i>Impatiens walleriana</i>
<i>Pelargonium x hortorum</i>
<i>Petunia x hybrida</i>
<i>Tagetes erecta</i>
<i>Tagetes patula</i>
<i>Verbena sp.</i>
<i>Viburnum sp.</i>

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

<i>Azalea (Rhododendron sp.)</i>

Table 3. List of isocycloseram treated crops with varying rates injury in at least one trial

<i>Hydrangea sp.</i> ¹

¹ No injury in 4 of 5 trials; moderate injury in 1 of 5 trials

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

<i>Bacopa sp.</i> ¹
<i>Chrysanthemum/Dendranthema sp.</i> ¹
<i>Crassula ovata</i> ²
<i>Pelargonium x domesticum</i> ²
<i>Rosa sp.</i> ³
<i>Trachycarpus fortunei</i> ¹
<i>Viola X wittrockiana</i> ¹

¹ No injury in 1 of 1 trial

² No injury in 2 of 2 trials

³ No injury in 1 of 2 trials

Table 5. Detailed Summary of Crop Safety Testing with Isocycloseram.

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 6/17/2026 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
34101	Arrowwood (Viburnum sp.)	Field Container	Uber	CA	2021	Foliar	No injury or impact on growth with 11.5, 23 and 46 fl oz per 100 gal applied with 0.05% Capsil.
34101	Arrowwood (Viburnum sp.)	Field Container	Wade	SC	2021	Foliar	No injury at 11.5, 23 or 46 fl oz per 100 gal applied twice a week apart.
34101	Arrowwood (Viburnum sp.) V. ovatum 'Everleaf'	Field Container	Doohan	OH	2021	Foliar	No injury or growth reduction at 11.5, 23, or 46 fl oz per 100 gal after 2 applications 7 days apart.
34705	Azalea (Rhododendron sp.)	Greenhouse	Saha	MI	2023	Foliar	Minor to severe chlorosis/necrosis of older foliage and leaf drop, although little apparent impact on new foliage, increasing with rate (11.5, 23, 46 fl oz per 100 gal, but no impact on growth 4 weeks after second weekly application.
35444	Azalea (Rhododendron sp.) 'Alaska'	Field Container	Uber	CA	2022	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal.
34705	Azalea (Rhododendron sp.) Azalea	Greenhouse	Saha	MI	2024	Foliar	Azalea treated with 11.5, 23 and 46 fl oz per 100-gal of the chemical exhibited very mild injury to the leaves. The growth indices of treated plants were not significantly different from untreated plants at the end of the experiment.
36301	Azalea (Rhododendron sp.) Azalea	Greenhouse	Saha	MI	2025	Foliar	Very mild injury observed on the leaves and slight reduction of growth indices at the end.
36301	Azalea (Rhododendron sp.) 'Girard's Fuchsia'	Greenhouse	Weiland	OR	2025	Foliar	No phytotoxicity was observed with any of the rates on any of the plants tested.
34099	Chrysanthemum, Garden (Chrysanthemum/Dendranthema sp.)	Field Container	Klett	CO	2020	Foliar	No injury or growth reduction, and no effect on flower production or bloom time, with 11.5, 23 and 46 fl oz per 100 gal + Capsil; applied 3 times weekly.
34123	Geranium, Zonal (Pelargonium x hortorum)	Greenhouse	Saha	MI	2022	Foliar	Slight injury at all rates (11, 22, 44 fl oz per 100 gal) and significant reduction in plant growth at all rates.

34123	Geranium, Zonal (Pelargonium x hortorum) 'Americana Dark Red'	Greenhouse	Hotchkiss	MI	2021	Foliar	No significant injury or growth reduction at 11.5, 23, or 46 fl oz per 100 gal
34123	Geranium, Zonal (Pelargonium x hortorum) 'Presto Red Brilliant'	Greenhouse	Ong	TX	2023	Foliar	No injury or growth reduction with 11.5, 23, and 46 fl oz per 100 gal.
35447	Hydrangea (Hydrangea sp.)	Greenhouse	Saha	MI	2023	Foliar	No injury with 11.5, 23 and 46 fl oz per 100 gal at 4 weeks after second weekly application.
35447	Hydrangea (Hydrangea sp.)	Greenhouse	Saha	MI	2024	Foliar	Azalea treated with 11.5, 23 and 46 fl oz per 100-gal of the chemical exhibited very mild injury to the leaves. The growth indices of treated plants were not significantly different from untreated plants at the end of the experiment.
36304	Hydrangea (Hydrangea sp.)	Greenhouse	Saha	MI	2025	Foliar	Growth of the plant was not affected. There were not many significant differences between untreated and treated plants but treated plants had minor to moderate phytotoxic symptoms.
34127	Hydrangea (Hydrangea sp.) 'Nikko blue'	Field Container	Wade	SC	2024	Foliar	No phytotoxicity noted at any application rate and all plants at the end of the trial were considered very marketable.
36304	Hydrangea (Hydrangea sp.) 'Eclipse'	Greenhouse	Addesso	TN	2025	Foliar	No phytotoxicity was observed with any of the rates on any of the plants tested.
36304	Hydrangea (Hydrangea sp.) H. macrophylla, 'Brestenburg'	Greenhouse	Gilrein	NY	2025	Foliar	No phytotoxicity symptoms were observed on foliage or flowers during the trial. Plant height and width did not differ significantly among treatments.
34125	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Baby'	Greenhouse	Nansen	CA	2020	Foliar	No injury or significant growth reduction with 0.9, 1.8 and 3.6 ml per liter applied 3 times weekly.
34125	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Beacon White'	Greenhouse	Bodine	NJ	2020	Foliar	Virtually no injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal + Capsil applied twice weekly.
34125	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Dazzler Rose'	Greenhouse	Gilrein	NY	2020	Foliar	No injury to foliage or flowers with 11.5, 23, and 46 fl oz per 100 gal applied twice.
34125	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Super Elfin XP Coral'	Greenhouse	Gilrein	NY	2020	Foliar	No injury to foliage or flowers with 11.5, 23, and 46 fl oz per 100 gal applied twice.
34125	Impatiens, Common Garden; Buzzy Lizzy (Impatiens walleriana) 'Super Elfin XP Violet'	Greenhouse	Vafaie	TX	2020	Foliar	No injury or significant growth reduction with 11.5, 23 and 46 fl oz per 100 gal applied 3 times weekly.

34702	Jade Plant (<i>Crassula ovata</i>)	Greenhouse	Dale	FL	2023	Foliar	No injury with 11.5, 23 and 46 fl oz per 100 gal; no statistically significant impact on plant height by the number of leaves per plant increased numerically as rate increased.
35442	Jade Plant (<i>Crassula ovata</i>) 'Wavy'	Field Container	Uber	CA	2022	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal.
34094	Marigold, African (<i>Tagetes erecta</i>) 'Inca II Yellow'	Greenhouse	Nansen	CA	2020	Foliar	No significant injury nor growth reduction with 0.9, 1.8 and 3.6 ml per liter applied 3 times weekly.
34094	Marigold, African (<i>Tagetes erecta</i>) 'Taishan Orange'	Greenhouse	Bodine	NJ	2020	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal + Capsil applied twice weekly.
34094	Marigold, African (<i>Tagetes erecta</i>) 'Taishan Yellow'	Greenhouse	Vafaie	TX	2021	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal applied twice biweekly.
36299	Marigold, French (<i>Tagetes patula</i>) 'Bonanza Orange'	Greenhouse	Weiland	OR	2025	Foliar	No phytotoxicity was observed with any of the rates on any of the plants tested.
34095	Marigold, French (<i>Tagetes patula</i>) 'Disco Marietta'	Greenhouse	Hotchkiss	MI	2021	Foliar	No significant injury or growth reduction at 11.5, 23, or 46 fl oz per 100 gal; nontreated and capsil controls had injury due to thrips infestations while the treated plants did not.
34095	Marigold, French (<i>Tagetes patula</i>) 'Durango Red'	Greenhouse	Bodine	NJ	2020	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal + Capsil applied twice weekly.
34708	Palm, Chinese Windmill (<i>Trachycarpus fortunei</i>) 'Nikko blue'	Field Container	Wade	SC	2024	Foliar	No phytotoxicity noted at any application rate and all plants at the end of the trial were considered very marketable.
34093	Pansy, Large Flowering; Wittrock's Violet (<i>Viola X wittrockiana</i>)	Greenhouse	Bodine	NJ	2020	Foliar	No injury at 11.5, 23 or 46 fl oz per 100 gal applied twice at a 7 day interval.
34092	Petunia (<i>Petunia x hybrida</i>) 'Dreams Red'	Greenhouse	Vafaie	TX	2021	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal applied twice biweekly.
34092	Petunia (<i>Petunia x hybrida</i>) 'Pretty Grand'	Greenhouse	Larson	KY	2021	Foliar	No significant injury at 11.5, 23 or 46 fl oz per 100 gal applied twice at weekly intervals.
34092	Petunia (<i>Petunia x hybrida</i>) 'Tidal Wave Hot Pink'	Greenhouse	Bodine	NJ	2020	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal + Capsil applied twice weekly.
34617	Poinsettia (<i>Euphorbia pulcherrima</i>)	Shadehouse/Lath House	Cheng	HI	2020	Foliar	No injury or growth reduction with 11.5, 23 and 46 fl oz per 100 gal.

34124	Poinsettia (Euphorbia pulcherrima)	Greenhouse	Rivera	PR	2022	Foliar	No injury or growth was observed with 11.5, 23, or 46 fl oz per 100 gal.
34124	Poinsettia (Euphorbia pulcherrima) 'Polar Bear' and 'Premium Red'	Greenhouse	Gilrein	NY	2020	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal applied twice 7 d apart.
34124	Poinsettia (Euphorbia pulcherrima) 'Prestige Red'	Greenhouse	Uber	CA	2020	Foliar	No injury and growth reduction with 11.5, 23 and 46 fl oz per 100 gal + Capsil applied twice weekly.
36302	Regal Geranium (Pelargonium x domesticum) 'Dark Red'	Greenhouse	Weiland	OR	2025	Foliar	No phytotoxicity was observed with any of the rates on any of the plants tested.
34122	Regal Geranium (Pelargonium x domesticum) 'Regal Geranium'	Field Container	Khan	TX	2024	Foliar	No phytotoxicity was observed with any of the rates on any of the plants tested.
34100	Rose (Rosa sp.) 'Knock Out'	Field Container	Martini	FL	2020	Foliar	Slight to moderate chlorosis and necrosis increasing with rates (11.5, 23, 46 fl oz per 100 gal) applied 3 times at weekly intervals, but injury declined over time.
34100	Rose (Rosa sp.) 'Radtko'	Field Container	Gilrein	NY	2020	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal applied twice 7 d apart.
34096	Transvaal Daisy (Gerbera sp.) 'Rev. Bicolor Yellow Orange Dark Eye'	Greenhouse	Gilrein	NY	2021	Foliar	No phytotoxicity when applied at 11.5, 23 and 46 fl oz/100 gal
34096	Transvaal Daisy (Gerbera sp.) 'Rev. Red Lt Eye'	Greenhouse	Gilrein	NY	2021	Foliar	No phytotoxicity when applied at 11.5, 23 and 46 fl oz/100 gal
34096	Transvaal Daisy (Gerbera sp.) 'Jaguar Mix'	Greenhouse	Hotchkiss	MI	2021	Foliar	No significant injury or growth reduction at 11.5, 23, or 46 fl oz per 100 gal.
34097	Vervain (Verbena sp.) '1091 Vanessa Com'	Greenhouse	Khan	TX	2023	Foliar	No injury or impact on growth with 11.5, 23, or 46 fl oz per 100 gal.
34097	Vervain (Verbena sp.) 'Endurascap Red'	Greenhouse	Uber	CA	2022	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal.
34097	Vervain (Verbena sp.) 'Lanai Peach'	Greenhouse	Hotchkiss	MI	2021	Foliar	No significant injury or growth reduction at 11.5, 23, or 46 fl oz per 100 gal
35443	Water Hyssop (Bacopa sp.) 'White'	Field Container	Uber	CA	2022	Foliar	No injury or growth reduction with 11.5, 23 or 46 fl oz per 100 gal.

Label Suggestions

In this report, the overall safety of Isocycloseram (Vykenda) was positive with 94% (48/51 trials) reporting none or minor, transient injury at 11.5 (1X) , 23 (2X) and 46 (4X) fl oz per 100 gal, suggesting that this active ingredient is safe to ornamental horticulture crops. The species-level conclusions mainly vary with *Rhododendron sp.* (Azalea), *Hydrangea sp.*, and *Rosa sp.* warranting caution, because of mixed results. Given the lack of phytotoxicity across so many different plant species and genera, it is suggested that all the 17 species or genera in Tables 1, 3 and 4 that showed none to minimal, transient injury be placed on the Isocycloseram label if Syngenta has similar results on these crops. Additionally, 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. Isocycloseram 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 Isocycloseram to that crop'.

Appendix 1: Contributing Researchers

Dr. Zhiqiang Cheng	University of Hawaii at Manoa Department of Plant and Environmental Protection Sciences Honolulu, HI 96822
Mr. Dave Bodine	Rutgers University Cream Ridge Experiment Station 283 Rt. 539 Cream Ridge, NJ 08514
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