



[Environmental Horticulture Program Research Summaries](#)

## **IR-4 Environmental Horticulture Program Afidopyropen Crop Safety**

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## **Abstract**

Ventigra (BAS 440i) (afidopyropen) is a new insecticide recently registered by BASF for the control of piercing and sucking insect pests such as aphids, whiteflies, psyllids, scales and leafhoppers. The IR-4 Project completed 106 crop safety trials on 42 environmental horticulture plant species or genera from 2015 through 2019. In these trials, 24 genera or species exhibited minimal or no injury after foliar applications in a minimum of 3 trials for each crop; these can be added to a list of tolerant plants in the new label for this active ingredient. All trials for 18 other species or genera exhibited minimal or no injury in the limited number of trials (one or two) for each crop with the exception of dahlia which had moderate injury in one trial.

## Introduction

Ventigra (BAS 440i) (afidopyrophen) is a new insecticide recently registered by BASF for the control of piercing and sucking insect pests such as aphids, whiteflies, psyllids, scales and leafhoppers. The IR-4 Project completed 106 crop safety trials on 42 environmental horticulture plant species or genera from 2015 to 2019.

## Materials and Methods

Ventigra was applied as foliar treatment mixed with NIS typically 3 times at approximately 14 days intervals. The application rates were at 7, 14 and 28 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: 15-008, 16-008, 17-008, 18-011, 19-011. 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.

Ventigra was supplied to researchers (See list of researchers in Appendix 1) by BASF.

## Results and Summary

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 at the 1X rate sufficient to recommend growers not utilize afidopyrophen, and 4) more data are needed to make informed recommendations.

## Phytotoxicity

Across all crops tested, Ventigra exhibited no or minimal negative impact on all plant species or genera. Twenty-one of these crops had the minimum number of 3 tests for definitive conclusion of crop safety (Table 1). No crop displayed significant injury with BAS 440i (Tables 2 and 3). There are 18 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 Ventigra treated crops with no or minimal transitory injury.**

<i>Aster</i> sp.	<i>Hedera</i> sp.
<i>Astilbe simplicifolia</i>	<i>Hibiscus</i> sp.
<i>Begonia</i> sp.	<i>Hydrangea</i> sp.
<i>Chrysanthemum/Dendranthema</i> sp.	<i>Lagerstroemia indica</i>
<i>Coleus</i> sp.	<i>Monarda didyma</i>
<i>Coreopsis</i> sp.	<i>Salix</i> sp.
<i>Cornus</i> sp.	<i>Sedum</i> sp.
<i>Cotoneaster</i> sp.	<i>Taxus</i> sp.
<i>Delphinium</i> sp.	<i>Veronica longifolia</i>
<i>Dianthus</i> sp.	<i>Viburnum</i> sp.
<i>Digitalis purpurea</i>	<i>Zinnia</i> sp.
<i>Echinacea</i> sp.	
<i>Euonymus</i> sp.	

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

None

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

None

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

<i>Angelonia angustifolia</i> <sup>2</sup>	<i>Nerium oleander</i> <sup>2</sup>
<i>Aquilegia</i> sp.	<i>Paeonia</i> sp.
<i>Camelia japonica</i> <sup>1</sup>	<i>Papaver orientale</i> <sup>1</sup>
<i>Dahlia</i> sp. (see Harvey 2016)	<i>Picea</i> sp.
<i>Euphorbia pulcherrima</i> <sup>1</sup>	<i>Platanus</i> sp. <sup>1</sup>
<i>Gerbera</i> sp. <sup>2</sup>	<i>Rhododendron</i> sp. <sup>2</sup>
<i>Helichrysum</i> sp. <sup>1</sup>	<i>Rosa</i> sp. <sup>1</sup>
<i>Leucanthemum x superbum</i> <sup>1</sup>	<i>Solidago</i> sp.
<i>Ligustrum</i> sp. <sup>2</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 Ventigra (afidopyropen)**

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 11/21/2019 are listed below.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32409	Narrowleaf Angelonia ( <i>Angelonia angustifolia</i> ) 'Anbluim Angelface'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32409	Narrowleaf Angelonia ( <i>Angelonia angustifolia</i> ) 'Serena Purple'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 4 times.
32310	Columbine ( <i>Aquilegia</i> sp.)	Field Container	Persad	OH	2016	Foliar	No significant injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal + UltraPure Oil applied 3 times.
32310	Columbine ( <i>Aquilegia</i> sp.) <i>A. caerulea</i> 'Origami'	Field Container	Gilrein	NY	2016	Foliar	Moderate to severe injury with 7, 14 and 28 fl oz per 100 gal; significant growth reduction at 2X and 4X.
33446	Aster ( <i>Aster</i> sp.) Professor Kippenburg	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
33446	Aster ( <i>Aster</i> sp.) Wood's Blue	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
33446	Aster ( <i>Aster</i> sp.) Wood's Pink	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32311	False Goat's Beard ( <i>Astilbe</i> sp.) <i>A. simplicifolia</i> 'Hennie Graafland'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32311	False Goat's Beard ( <i>Astilbe</i> sp.) Fanal	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32311	False Goat's Beard ( <i>Astilbe</i> sp.) Rheinland	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32329	Begonia ( <i>Begonia</i> sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32329	Begonia ( <i>Begonia</i> sp.) 'Ambassador Pink'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 4 times.
32329	Begonia ( <i>Begonia</i> sp.) 'Super Olympia Mix'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32308	Camellia ( <i>Camellia</i> sp.) <i>C. japonica</i> 'April Kiss'	Field Container	Gilrein	NY	2019	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32714	Chrysanthemum x rubellum ( <i>Chrysanthemum x rubellum</i> ) <i>Dendranthema zawadskii</i> 'Clara Curtis'	Field Container	Klett	CO	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied twice at 6-week intervals.
32315	Chrysanthemum, Garden ( <i>Chrysanthemum/Dendranthema</i> sp.)	Field Container	Vafaie	TX	2018	Foliar	No injury nor growth reduction with 7, 14 and 28 fl oz per 100 gal applied twice.
32315	Chrysanthemum, Garden ( <i>Chrysanthemum/Dendranthema</i> sp.) 'Regal Cheryl Purple'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 4 times.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32327	Coleus, Flamenettle (Coleus sp.) 'Dark Chocolate'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32327	Coleus, Flamenettle (Coleus sp.) 'Trusty Rusty'	Field Container	Uber	CA	2017	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Capsil applied 3 times biweekly.
32327	Coleus, Flamenettle (Coleus sp.) 'Wizard Jade'	Field Container	Gilrein	NY	2017	Foliar	No injury nor effect on plant growth and quality with 7, 14 and 28 fl oz per 100 gal.
32327	Coleus, Flamenettle (Coleus sp.) 'Wizard Velvet Red'	Field Container	Gilrein	NY	2017	Foliar	No injury nor effect on plant growth and quality with 7, 14 and 28 fl oz per 100 gal.
32313	Golden Tickseed, Garden Coreopsis (Coreopsis tinctoria)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32313	Golden Tickseed, Garden Coreopsis (Coreopsis tinctoria) C. verticillata 'Moonbeam'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32313	Golden Tickseed, Garden Coreopsis (Coreopsis tinctoria) C. grandiflora 'Early Sunrise'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32299	Dogwood (Cornus sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32299	Dogwood (Cornus sp.) C. alba 'Ivory Halo'	Field Container	Gilrein	NY	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal.
32299	Dogwood (Cornus sp.) C. officinalis	Field Container	Persad	OH	2016	Foliar	No significant injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + UltraPure Oil applied 3 times.
32304	Cotoneaster (Cotoneaster sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32304	Cotoneaster (Cotoneaster sp.) C. adpressus 'Tom Thumb'	Field Container	Reding	OH	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; slight growth reduction; all plants marketable.
32304	Cotoneaster (Cotoneaster sp.) 'Coral Beauty'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32326	Dahlia (Dahlia sp.)	Field Container	Harvey	WA	2016	Foliar	Moderate to severe injury increasing with rates (7, 14 and 28 fl oz per 100 gal) applied twice weekly. Environmental damage may be a significant factor.
32326	Dahlia (Dahlia sp.)	Field Container	Uber	CA	2018	Foliar	No injury or growth reduction with 7, 14 and 21 fl oz per 100 gal + Capsil applied 3 times.
32326	Dahlia (Dahlia sp.) 'Hypnotica Purple Bicolor'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32314	Larkspur (Delphinium sp.)	Field Container	Uber	CA	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Capsil applied 3 times.



PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32314	Larkspur (Delphinium sp.) D. belladonna 'Summer Blue'	Field Container	Gilrein	NY	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal.
32314	Larkspur (Delphinium sp.) 'Summer Morning'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32316	Pink (Dianthus sp.) 'Amazon Rose Magic'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 4 times.
32316	Pink (Dianthus sp.) Dianthus gratianopolitanus 'Firewitch'	Field Container	Klett	CO	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied twice at 6-week intervals.
32316	Pink (Dianthus sp.) 'Super Trooper Velvet Red'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32317	Foxglove, Purple (Digitalis purpurea) 'Camelot Rose'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32317	Foxglove, Purple (Digitalis purpurea) Dalmatian Peach	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32317	Foxglove, Purple (Digitalis purpurea) Dalmatian Rose	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32312	Purple Coneflower (Echinacea sp.)	Field Container	Persad	OH	2016	Foliar	No injury or significant growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal + UltraPure Oil applied 3 times.
32312	Purple Coneflower (Echinacea sp.)	Field Container	Uber	CA	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Capsil applied 3 times.
32312	Purple Coneflower (Echinacea sp.) Echinacea Supreme™ 'Flamingo'	Field Container	Klett	CO	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied twice at 6-week intervals.
32312	Purple Coneflower (Echinacea sp.) 'Pow Wow Wild Berry'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32306	Spindletree (Euonymus sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7 and 14 fl oz, moderate with 28 fl oz, per 100 gal applied twice weekly.
32306	Spindletree (Euonymus sp.) E. fortunei 'Gold Splash'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32306	Spindletree (Euonymus sp.) 'Wintercreeper'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32331	Poinsettia (Euphorbia pulcherrima) Ascot Rainbow	Greenhouse	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal a
32331	Poinsettia (Euphorbia pulcherrima) 'Jubilee Red'	Greenhouse	Freiberger	NJ	2016	Foliar	No injury or growth or growth reduction with 7, 14 and 28 fl oz per 100 gal applied 3 times weekly.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32330	Transvaal Daisy (Gerbera sp.) 'Festival Grower Select Mix'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32330	Transvaal Daisy (Gerbera sp.) 'Royal Premium Mix'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 3 times.
32303	Ivy (Hedera sp.)	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32303	Ivy (Hedera sp.) English Ivy	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32303	Ivy (Hedera sp.) H. helix	Field Container	Fraelich	GA	2016	Foliar	No injury or difference in plant growth and marketability with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32318	Strawflower (Helichrysum sp.) 'Licorice'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32319	Rosemallow (Hibiscus sp.)	Field Container	Harvey	WA	2016	Foliar	Minor injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32319	Rosemallow (Hibiscus sp.) 'Brilliant Red'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32319	Rosemallow (Hibiscus sp.) H. moscheutos 'Luna Rose'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32302	Hydrangea (Hydrangea sp.) H. macrophylla	Field Container	Uber	CA	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Capsil applied 3 times.
32302	Hydrangea (Hydrangea sp.) 'Nikko Blue'	Field Container	Fraelich	GA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times; moderate stunting at 4X; all plants marketable.
32302	Hydrangea (Hydrangea sp.) 'Nikko Blue'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32302	Hydrangea (Hydrangea sp.) 'Quick Fire'	Field Container	Persad	OH	2016	Foliar	No significant injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + UltraPure Oil applied 3 times.
32309	Crape Myrtle (Lagerstroemia indica)	Field Container	Koivunen	CA	2016	Foliar	No injury with 7, minor injury (brown interveinal spots) with complete recovery at 14 and 28, fl oz per 100 gal + Dyne-Amic applied 3 times biweekly; no growth reduction.
32309	Crape Myrtle (Lagerstroemia indica) 'Natchez'	Field Container	Gilrein	NY	2017	Foliar	No injury nor effect on plant growth and quality with 7, 14 and 28 fl oz per 100 gal.
32309	Crape Myrtle (Lagerstroemia indica) 'Natchez'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
33004	Daisy (Leucanthemum x superbum) 'Crazy Daisy and 'Snow Lady'	Field Container	Gilrein	NY	2019	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied 3 times.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
33004	Daisy (Leucanthemum x superbum) 'Snow Lady'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32307	Privet (Ligustrum sp.) L. japonicum	Field Container	Uber	CA	2017	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Capsil applied 3 times biweekly.
32307	Privet (Ligustrum sp.) Wax Privet	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32323	Bee Balm, Scarlet (Monarda didyma) 'Balmy Purple'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32323	Bee Balm, Scarlet (Monarda didyma) Blue Stocking	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32323	Bee Balm, Scarlet (Monarda didyma) Marshall's Delight	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32301	Oleander, Rosebay (Nerium oleander)	Field Container	Koivunen	CA	2016	Foliar	No injury with 7, minor injury on flower (browning at edges) with complete recovery at 14 and 28, fl oz per 100 gal + Dyne-Amic applied 3 times biweekly; no growth reduction.
32301	Oleander, Rosebay (Nerium oleander) 'Cardinal Red'	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32324	Peony (Paeonia sp.)	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32324	Peony (Paeonia sp.) P. lactiflora 'Sarah Bernhardt'	Field Container	Gilrein	NY	2019	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32322	Oriental Poppy (Papaver orientale) Champagne Bubble Mix	Field Container	Davis	MI	2017	Foliar	No significant injury with 7 and 14, minor with complete recovery with 28 fl oz per 100 gal applied 4 times weekly.
32322	Oriental Poppy (Papaver orientale) 'Pizzicato Mix'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32294	Spruce (Picea sp.) P. omorika 'Serbian spruce'	Field Container	Gilrein	NY	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal.
32298	Plane Tree, Sycamore (Platanus sp.)	Field Container	Koivunen	CA	2016	Foliar	No significant injury with 7, minor to moderate injury (browning of youngest leaves) with complete recovery at 14 and 28, fl oz per 100 gal + Dyne-Amic applied 3 times biweekly; no growth reduction.
32293	Azalea (Rhododendron sp.)	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.
32293	Azalea (Rhododendron sp.) 'Pink Gumpo'	Field Container	Fraelich	GA	2016	Foliar	No injury or difference in plant growth and marketability with 7, 14 and 28 fl oz per 100 gal applied 3 times.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32296	Rose (Rosa sp.) 'Forever & Ever® Flamingo Kolorscape®'	Field Container	Frank	NC	2017	Foliar	No injury with 7 and 14, minor with 25 fl oz per 100 gal + surfactant applied twice.
32296	Rose (Rosa sp.) 'Oso Easy Fragrant Spreader'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32297	Willow (Salix sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32297	Willow (Salix sp.) S. caprea 'French Pussy'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32297	Willow (Salix sp.) S. integra 'Hakuro Nishiki'	Field Container	Frank	NC	2017	Foliar	No injury or growth reduction with 7, 14 and 25 fl oz per 100 gal + surfactant applied twice.
32325	Stonecrop (Sedum sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32325	Stonecrop (Sedum sp.) 'Angelina'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32325	Stonecrop (Sedum sp.) 'Autumn Fire'	Field Container	Gilrein	NY	2017	Foliar	No injury nor effect on plant growth and quality with 7, 14 and 28 fl oz per 100 gal.
32321	Goldenrod (Solidago sp.) S. canadensis 'Solidago Little Lemon'	Field Container	Gilrein	NY	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal.
32305	Yew (Taxus sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32305	Yew (Taxus sp.) T. media 'Margarita'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32305	Yew (Taxus sp.) T. x media 'Hicksii'	Field Container	Persad	OH	2016	Foliar	No significant injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + UltraPure Oil applied 3 times.
32320	Speedwell (Veronica sp.) Georgia Blue	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32320	Speedwell (Veronica sp.) Giles van Hees	Field Container	Davis	MI	2017	Foliar	No significant injury with 7, 14 and 28 fl oz per 100 gal applied 4 times weekly.
32320	Speedwell (Veronica sp.) V. longifolia 'Candied Candle'	Field Container	Davis	MI	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied 3 times.
32300	Arrowwood (Viburnum sp.)	Field Container	Fraelich	GA	2017	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied twice weekly.
32300	Arrowwood (Viburnum sp.)	Field Container	Harvey	WA	2016	Foliar	No injury with 7, 14 and 28 fl oz per 100 gal applied three times at weekly intervals.
32300	Arrowwood (Viburnum sp.)	Field Container	Wade	SC	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + Ultra-Pure Oil applied 3 times; all plants marketable.

PR#	Crop	Production Site	Researcher	State	Year	Application Type	Results
32410	Zinnia (Zinnia sp.)	Field Container	Harvey	WA	2016	Foliar	Moderate to severe injury increasing with rates (7, 14 and 28 fl oz per 100 gal) applied twice weekly. Environmental damage may be a significant factor.
32410	Zinnia (Zinnia sp.) 'Magnificent Mix'	Field Container	Freiberger	NJ	2015	Foliar	No injury or growth reduction with 1.5, 3.5 and 14 fl oz per 100 gal applied 4 times.
32410	Zinnia (Zinnia sp.) 'Profusion 5 Color Mix'	Field Container	Reding	OH	2016	Foliar	No injury or growth reduction with 7, 14 and 28 fl oz per 100 gal + NIS applied 3 times biweekly; all plants marketable.
32410	Zinnia (Zinnia sp.) Z. angustifolia	Field Container	Fraelich	GA	2016	Foliar	No injury or difference in plant growth and marketability with 7, 14 and 28 fl oz per 100 gal applied 3 times.

## Label Suggestions

In this report, eleven genera exhibited no or minimal injury after foliar treatments of Ventigra (afidopyropen) at 7, 14 and 28 fl oz per 100 gal. If tested crops will be listed on the label, these can be included in a future label:

*Aster* sp.

*Astilbe simplicifolia*

*Chrysanthemum/Dendranthema* sp.

*Coleus* sp.

*Coreopsis* sp.

*Cornus* sp.

*Cotoneaster* sp.

*Delphinium* sp.

*Dianthus* sp.

*Digitalis purpurea*

*Echinacea* sp.

*Hedera* sp.

*Hibiscus* sp.

*Hydrangea* sp.

*Lagerstroemia indica*

*Monarda didyma*

*Salix* sp.

*Sedum* sp.

*Taxus* sp.

*Veronica longifolia*

*Zinnia* sp.

Given the lack of phytotoxicity across so many different plant species and genera, it is suggested that 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. Ventigra 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 Ventigra to that crop’.

## Appendix 1: Contributing Researchers

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