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## **IR-4 Ornamental Horticulture Program Benzovindiflupyr + Azoxystrobin Crop Safety**

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**Acknowledgements  
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## Abstract

In 2013, as part of the crop safety screening for new active ingredients and recently registered fungicides, IR-4 started testing Mural WDG (benzovindiflupyr + azoxystrobin) for safety on several ornamental horticulture crops. During 2013 to 2017, the IR-4 Project completed 78 trials on 27 ornamental plant genera or species examining phytotoxicity related to foliar and/or drench applications. In these trials, no injury was observed on any species or genera. If a list of tested plants is placed on the Mural WDG label, 15 of the IR-4 screened plants can be added to the EPA label based on having 3 or more completed trials: *Aquilegia* sp., *Buddleia davidii*, *Buxus* sp., *Calibrachoa* sp., *Camellia* sp., *Dianthus* sp., *Helianthus* sp., *Heuchera* sp., *Juniperus* sp., *Lamium* sp., *Lavandula* sp., *Monarda* sp., *Osteospermum* sp., *Rhaphiolepis* sp., and *Scindapsus aureus*

## **Introduction**

In 2013 as part of the crop safety screening for new active ingredients and recently registered fungicides, IR-4 started testing Mural WDG (benzovindiflupyr + azoxystrobin) for safety on several ornamental horticulture crops. During 2013 to 2017, the IR-4 Project completed 78 trials on 27 ornamental plant genera or species examining phytotoxicity related to foliar and/or drench applications of Mural WDG.

## **Materials and Methods**

Mural WDG was tested as foliar and drench applications. Foliar applications were applied 3 times at 14 day intervals. The drench applications were applied once. For foliar applications, the application rates were 4.0, 7.0 and 14.0 oz per 100 gal; for drench applications, the rates were 2.0, 3.0 and 6.0 oz per 100 gal. All experiments had an untreated control. A minimum of 10 plants (replicate treatments) were required. Phytotoxicity was planned to be recorded on a scale of 0 to 10 (0 = No phytotoxicity; 10 = Complete kill), although one research used a 1 to 10 scale instead. Phytotoxicity was rated 7 days after each application. For testing, the following protocols were used: 13-010, 13-011, and 14-003, 15-003, 16-004, and 17-004. Please visit <http://ir4.rutgers.edu/ornamental/OrnamentalDrafts.cfm> to view and download these protocols.

Mural WDG was provided by Syngenta. See list of researchers in Appendix 1.

## **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 1X rate sufficient to recommend growers not utilize benzovindiflupyr + azoxystrobin, and 4) more data are needed to make informed recommendations.

### **Phytotoxicity**

Across all plant species tested, benzovindiflupyr + azoxystrobin exhibited no or minimal negative impact (Table 1) on 15 plant genera or species fell into this category. No crops exhibited significant injury (Table 3). There are 12 species or genera where less than 3 trials were conducted for either foliar or drench applications so there is not enough information available at this time (Table 4).

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

**Table 1. List of benzovindiflupyr + azoxystrobin treated crops with no or minimal transitory injury.**

|                         |                          |
|-------------------------|--------------------------|
| <i>Aquilegia</i> sp.    | <i>Juniperus</i> sp.     |
| <i>Buddleia davidii</i> | <i>Lamium</i> sp.        |
| <i>Buxus</i> sp.        | <i>Lavandula</i> sp.     |
| <i>Calibrachoa</i> sp.  | <i>Monarda</i> sp.       |
| <i>Camellia</i> sp.     | <i>Osteospermum</i> sp.  |
| <i>Dianthus</i> sp.     | <i>Rhaphiolepis</i> sp.  |
| <i>Helianthus</i> sp.   | <i>Scindapsus aureus</i> |
| <i>Heuchera</i> sp.     |                          |

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

None

**Table 3. List of benzovindiflupyr + azoxystrobin treated crops with significant injury at 1X.**

None

**Table 4. List of benzovindiflupyr + azoxystrobin treated crops where more information is needed.**

|                            |                              |
|----------------------------|------------------------------|
| <i>Abies</i> sp.           | <i>Hydrangea</i> sp.         |
| <i>Aglaonema</i> sp.       | <i>Phlox</i> sp.             |
| <i>Aster</i> sp.           | <i>Pseudotsuga menziesii</i> |
| <i>Berberis</i> sp.        | <i>Salvia officinalis</i>    |
| <i>Ceanothus gloriosus</i> | <i>Salvia microphylla</i>    |
| <i>Chamaerops humilis</i>  |                              |
| <i>Hibiscus</i> sp.        |                              |

**Table 5 Detailed Summary of Crop Safety Testing with Benzovindiflupyr + azoxystrobin**

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 11/28/2017 are listed below.

| PR#   | Crop  | Production Site | Researcher  | State | Year | Application Type | Results  |
|-------|---|-----------------|-------------|-------|------|------------------|--|
| 31502 | Fir (Abies sp.) A. balseama                               | Field Container | Brazeo      | MA    | 2013 | Foliar           | No injury with 4, 7 and 14 fl oz per 100 gal applied 3 times; minor height reduction with 4X.  |
| 31502 | Fir (Abies sp.) Abies procera                             | Field Container | DeFrancesco | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31503 | Aglaonema (Aglaonema sp.)                                 | Field Container | Palmateer   | FL    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.  |
| 31503 | Aglaonema (Aglaonema sp.) 'Silver Queen'                  | Field Container | Gu          | TX    | 2013 | Foliar           | No injury or growth reduction with X4602B at 4, 7 and 14 fl oz per 100 gal applied 3 times.  |
| 31751 | Columbine (Aquilegia sp.)                                 | Field Container | Grunwald    | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.  |
| 31751 | Columbine (Aquilegia sp.) A. canadensis 'Little Lanterns' | Field Container | Catlin      | NY    | 2014 | Foliar           | No injury or significant growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; slight spray residue after 3rd application. |
| 31751 | Columbine (Aquilegia sp.) A. chrysantha 'Yellow Queen'    | Field Container | DeFrancesco | OR    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.  |
| 31751 | Columbine (Aquilegia sp.) 'Texas Gold'                    | Field Container | Gu          | TX    | 2015 | Foliar           | No significant injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times. Researcher recommends repeating trial.      |
| 31593 | Aster (Aster sp.) 'Believe Purple'                        | Field Container | Freiberger  | NJ    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31593 | Aster (Aster sp.) 'Purple Dome'                           | Field Container | Wade        | SC    | 2017 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly; all plants marketable.                         |
| 31511 | Barberry (Berberis sp.)                                   | Field Container | Harvey      | WA    | 2013 | Drench           | No injury with 2, 3 and 6 oz per 100 gal.  |
| 31511 | Barberry (Berberis sp.) B. thunbergii 'Aurea'             | Field Container | Wade        | SC    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal applied 3 times; all plants marketable.                                   |
| 31511 | Barberry (Berberis sp.) 'Orange Rocket'                   | Field Container | Gu          | TX    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times. Researcher recommends repeating trial.                  |
| 31752 | Butterfly Bush (Buddleia davidii)                         | Field Container | Grunwald    | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.  |
| 31752 | Butterfly Bush (Buddleia davidii)                         | Field Container | Harvey      | WA    | 2014 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31752 | Butterfly Bush (Buddleia davidii) 'Black Knight'          | Field Container | Wade        | SC    | 2017 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly; all plants marketable.                         |
| 31512 | Boxwood (Buxus sp.) B. macrophylla japonica               | Field Container | Uber        | CA    | 2016 | Foliar           | No injury or growth reduction with 4 and 7 oz per 100 gal applied 3 times.   |
| 31512 | Boxwood (Buxus sp.) B. microphylla japnica 'Winter Gem'   | Field Container | Fraelich    | GA    | 2013 | Drench           | No injury or growth reduction at 4, 7, and 14 oz per 100 gal.  |

| PR#   | Crop   | Production Site | Researcher        | State | Year | Application Type | Results   |
|-------|--|-----------------|-------------------|-------|------|------------------|---|
| 31512 | Boxwood ( <i>Buxus</i> sp.) 'Green Velvet'   | Field Container | Fraelich          | GA    | 2016 | Foliar           | No injury or difference in plant growth and marketability with 4, 7 and 14 oz per 100 gal applied 3 times.              |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.)  | Greenhouse      | Koivunen          | CA    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.  |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.)  | Greenhouse      | Williams          | IL    | 2013 | Drench           | No injury with 4, 7 and 14 fl oz per 100 gal applied 3 times at monthly intervals slight width reduction at 4X.         |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.)  | Greenhouse      | Williams          | IL    | 2013 | Foliar           | No injury or growth reduction with 4, 7 and 14 fl oz per 100 gal applied 3 times at monthly intervals.                  |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.) 'Superbells® Strawberry Punch' and 'Superbells® Ch | Greenhouse      | Wick              | MA    | 2015 | Foliar           | No injury to 3 cultivars with 4, 7 and 14 fl oz per 100 gal applied 3 times.  |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.) 'Cabaret Purple'                                   | Greenhouse      | Williams-Woodward | GA    | 2013 | Foliar           | No significant injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                              |
| 31706 | Calibrachoa ( <i>Calibrachoa</i> sp.) Kabloom White                                      | Greenhouse      | Freiberger        | NJ    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times   |
| 31504 | Camellia ( <i>Camellia</i> sp.) C. japonica 'Elena'                                      | Field Container | Henn              | MS    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.  |
| 31504 | Camellia ( <i>Camellia</i> sp.) C. japonica 'Kramer's Supreme'                           | Field Container | Meador            | CA    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; comparable to Heritage.                  |
| 31504 | Camellia ( <i>Camellia</i> sp.) 'ShiShi Gashira'   | Field Container | Wade              | SC    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal applied 3 times; all plants marketable.                    |
| 31504 | Camellia ( <i>Camellia</i> sp.) 'ShiShi Gashira'   | Field Container | Wade              | SC    | 2013 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; all plants marketable.                   |
| 31753 | Ceanothus ( <i>Ceanothus</i> sp.) C. americanus  | Field Container | Brazee            | MA    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.  |
| 31753 | Ceanothus ( <i>Ceanothus</i> sp.) C. gloriosus 'Point Reyes'                             | Field Container | DeFrancesco       | OR    | 2016 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.                                 |
| 33069 | Palm, Mediterranean Fan ( <i>Chamaerops humilis</i> )                                    | Field Container | Palmateer         | FL    | 2016 | Foliar           | No injury or growth reduction with 4, 7 and 14 fl oz per 100 gal applied 3 times.                                       |
| 31754 | Pink ( <i>Dianthus</i> sp.)  | Field Container | Grunwald          | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.                                     |
| 31754 | Pink ( <i>Dianthus</i> sp.) D. chinensis 'First Love'                                    | Field Container | DeFrancesco       | OR    | 2014 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times; slight to moderate growth reduction.                         |
| 31754 | Pink ( <i>Dianthus</i> sp.) D. gratianopolitanus 'Firewitch'                             | Field Container | Hausbeck          | MI    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; visible spray residue on treated plants. |
| 31754 | Pink ( <i>Dianthus</i> sp.) 'Neon Star'  | Field Container | Hand              | OH    | 2014 | Foliar           | No injury or growth reduction with 8, 14 and 28 oz per 100 gal applied 3 times.   |
| 31505 | Sunflower ( <i>Helianthus</i> sp.)   | Field Container | Grunwald          | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.                                     |
| 31505 | Sunflower ( <i>Helianthus</i> sp.)   | Field Container | Harvey            | WA    | 2013 | Drench           | No injury with 2, 3 and 6 oz per 100 gal.   |



| PR#   | Crop  | Production Site | Researcher  | State | Year | Application Type | Results  |
|-------|---|-----------------|-------------|-------|------|------------------|--|
| 31505 | Sunflower ( <i>Helianthus</i> sp.)  | Field Container | Harvey      | WA    | 2013 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31505 | Sunflower ( <i>Helianthus</i> sp.) 'Table Mountain'                       | Field Container | Gu          | TX    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31506 | Alumroot ( <i>Heuchera</i> sp.)   | Field Container | Grunwald    | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.                        |
| 31506 | Alumroot ( <i>Heuchera</i> sp.)   | Field Container | Harvey      | WA    | 2013 | Drench           | No injury with 2, 3 and 6 oz per 100 gal.  |
| 31506 | Alumroot ( <i>Heuchera</i> sp.)   | Field Container | Harvey      | WA    | 2013 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31506 | Alumroot ( <i>Heuchera</i> sp.) <i>H. americana</i> 'Electra'             | Field Container | DeFrancesco | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31507 | Rosemallow ( <i>Hibiscus</i> sp.) 'Disco Belle Rosy Red'                  | Field Container | Wade        | SC    | 2013 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; all plants marketable.      |
| 31507 | Rosemallow ( <i>Hibiscus</i> sp.) <i>H. trionum</i> 'Simply Love'         | Field Container | DeFrancesco | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31755 | Hydrangea ( <i>Hydrangea</i> sp.)   | Field Container | Harvey      | WA    | 2014 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31755 | Hydrangea ( <i>Hydrangea</i> sp.) <i>H. macrophylla</i> 'Nikko Blue'      | Field Container | Fraelich    | GA    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31513 | Juniper ( <i>Juniperus</i> sp.)   | Field Container | Harvey      | WA    | 2013 | Drench           | No injury with 2, 3 and 6 oz per 100 gal.  |
| 31513 | Juniper ( <i>Juniperus</i> sp.) <i>J. conferta</i> 'Blue Pacific'         | Field Container | Fraelich    | GA    | 2016 | Foliar           | No injury or difference in plant growth and marketability with 4, 7 and 14 oz per 100 gal applied 3 times. |
| 31513 | Juniper ( <i>Juniperus</i> sp.) <i>J. virginiana</i>                      | Field Container | Braze       | MA    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 fl oz per 100 gal applied 3 times.                          |
| 31513 | Juniper ( <i>Juniperus</i> sp.) <i>Juniperus conferta</i> 'Blue Pacific'  | Field Container | Fraelich    | GA    | 2015 | Foliar           | No injury or difference in plant growth and marketability with 4, 7 and 14 oz per 100 gal applied 3 times. |
| 31756 | Dead Nettle ( <i>Lamium</i> sp.)  | Field Container | Grunwald    | OR    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31756 | Dead Nettle ( <i>Lamium</i> sp.) <i>L. maculatum</i> 'Golden Anniversary' | Field Container | Catlin      | NY    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.                    |
| 31756 | Dead Nettle ( <i>Lamium</i> sp.) <i>L. maculatum</i> 'Lemon Frost'        | Field Container | Klett       | CO    | 2016 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times (6/23, 8/5, 8/18).           |
| 31760 | Lavender ( <i>Lavandula</i> sp.)  | Field Container | Grunwald    | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.                        |
| 31760 | Lavender ( <i>Lavandula</i> sp.)  | Field Container | Harvey      | WA    | 2014 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31760 | Lavender ( <i>Lavandula</i> sp.) <i>L. angustifolia</i> 'Munstead'        | Field Container | Hand        | OH    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |
| 31760 | Lavender ( <i>Lavandula</i> sp.) <i>L. angustifolia</i> 'Munstead'        | Field Container | Hausbeck    | MI    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                             |

| PR#   | Crop   | Production Site | Researcher  | State | Year | Application Type | Results  |
|-------|--|-----------------|-------------|-------|------|------------------|--|
| 31760 | Lavender ( <i>Lavandula</i> sp.) <i>L. x intermedia</i> 'Grosso'                         | Field Container | DeFrancesco | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31757 | Beebalm, Scarlet ( <i>Monarda didyma</i> )   | Field Container | Grunwald    | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal; all plants saleable.                    |
| 31757 | Beebalm, Scarlet ( <i>Monarda didyma</i> ) 'Marshal's Delight'                           | Field Container | DeFrancesco | OR    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31757 | Beebalm, Scarlet ( <i>Monarda didyma</i> ) 'Pink Supreme'                                | Field Container | Gu          | TX    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31508 | Daisybush ( <i>Osteospermum</i> sp.)   | Greenhouse      | Williams    | IL    | 2013 | Foliar           | No injury or growth reduction with 4, 7 and 14 fl oz per 100 gal applied 3 times at monthly intervals. |
| 31508 | Daisybush ( <i>Osteospermum</i> sp.) 'Akila'   | Greenhouse      | Freiberger  | NJ    | 2014 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal.  |
| 31508 | Daisybush ( <i>Osteospermum</i> sp.) 'Akila'   | Greenhouse      | Freiberger  | NJ    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31508 | Daisybush ( <i>Osteospermum</i> sp.) <i>O. ecklonis</i> 'Summertime Blueberry'           | Greenhouse      | DeFrancesco | OR    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal.  |
| 31758 | Phlox, Fall ( <i>Phlox paniculata</i> )  | Field Container | Harvey      | WA    | 2014 | Foliar           | No injury with 4, 7 and 14 oz per 100 gal applied 3 times.   |
| 31758 | Phlox, Fall ( <i>Phlox paniculata</i> ) 'David'  | Field Container | Catlin      | NY    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.                |
| 31509 | Fir, Douglas ( <i>Pseudotsuga menziesii</i> )  | Greenhouse      | Grunwald    | OR    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 fl oz per 100 gal; all plants marketable.                |
| 31510 | Indian Hawthorn ( <i>Rhaphiolepis indica</i> )   | Field Container | Uber        | CA    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31510 | Indian Hawthorn ( <i>Rhaphiolepis indica</i> ) 'Alba'                                    | Field Container | Wade        | SC    | 2013 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times; all plants marketable.  |
| 31510 | Indian Hawthorn ( <i>Rhaphiolepis indica</i> ) <i>R. umbellata</i> 'Southern Moon Yedda' | Field Container | Fraelich    | GA    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31514 | Common Sage ( <i>Salvia officinalis</i> )  | Field Container | Wade        | SC    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal applied 3 times; all plants marketable.   |
| 32867 | Sage ( <i>Salvia</i> sp.) <i>S. microphylla</i> 'Hotlips'                                | Field Container | DeFrancesco | OR    | 2016 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31594 | Centipede Tongavine ( <i>Scindapsus aureus</i> )   | Greenhouse      | Catlin      | NY    | 2013 | Drench           | No injury or growth reduction with 2, 3 and 6 oz per 100 gal.  |
| 31594 | Centipede Tongavine ( <i>Scindapsus aureus</i> )   | Greenhouse      | Gu          | TX    | 2014 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times.                         |
| 31594 | Centipede Tongavine ( <i>Scindapsus aureus</i> )   | Greenhouse      | Palmateer   | FL    | 2015 | Foliar           | No injury or growth reduction with 4, 7 and 14 oz per 100 gal applied 3 times biweekly.                |

## Label Suggestions

In this report, all 27 species or genera exhibited minimal or no injury after foliar and/or drench treatments of benzovindiflupyr + azoxystrobin. If a list of tested plants is placed on the Mural WDG label, 15 of the IR-4 screened plants can be added to the EPA label based on having 3 or more completed trials:

*Aquilegia* sp.  
*Buddleia davidii*  
*Buxus* sp.  
*Calibrachoa* sp.  
*Camellia* sp.  
*Dianthus* sp.  
*Helianthus* sp.  
*Heuchera* sp.

*Juniperus* sp.  
*Lamium* sp.  
*Lavandula* sp.  
*Monarda* sp.  
*Osteospermum* sp.  
*Rhaphiolepis* sp.  
*Scindapsus aureus*

## Appendix 1: Contributing Researchers

|                     |  |
|---------------------|--|
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