

Project Name: Spurge Efficacy

Dates Active:

2022-2023

Project Description:

Efficacy against Spurges.

Research Project Abstract:

Nursery growers have had a longstanding battle to control weeds in environmental horticulture crops. Spurge (*Chamaesyce maculata*), is one of the most difficult weeds to control in container grown ornamentals. It grows aggressively in containers and can outcompete ornamental crops for water, nutrients, and light. Several chemical tools are available for preemergent control. However, there remains a need for effective control of emerged weed seedlings. At the 2007 Environmental Horticulture Workshop, IR-4 initiated a study to determine whether preemergent herbicides could provide efficacy for spurge, and other weeds, up to the 2-4 leaf stage. Research was conducted from 2008 through 2019. This report is a brief summary of available data from 18 experiments received through the IR-4 Environmental Horticulture Program. Early postemergence applications of Casoron, Certainty, Gallery, Marengo/Indaziflam, Pendulum, SP 1770, Tower and V-10142 provided significant control of emerged spurge. These findings benefit growers by identifying select preemergence herbicides which control specific weeds at early emergence stages in container grown ornamental horticulture crops.

| Target Species (Phytotoxicity, or common and Latin name of arthropod, pathogen, weed): |
|---|
| Spurge, Spotted/Prostrate (<i>Chamaesyce maculata</i>) Spurge (<i>Chamaesyce</i> sp.) |

| Target Crops (list tested crops if ongoing or completed project) |
|---|
| None |

| Target Product(s)(list tested products or numbered compounds if ongoing or completed project) | |
|---|---|
| Axxe (Pelargonic acid) | Gallery 75DF (Isoxaben) |
| Barricade 4FL (Prodiamine) | Gallery SC (Isoxaben) |
| Basagran T&O Herbicide (Bentazon) | Gemini Granular (Prodiamine + isoxaben) |
| Biathlon (Oxyfluorfen + Prodiamine) | HGH-63 2G (Oxyfluorfen) |
| BroadStar 0.25G (Flumioxazin) | Marengo 74SC (Indaziflam) |
| BroadStar 0.25G VC1604 (Flumioxazin) | Marengo G (Indaziflam 0.0224%) |
| Casoron 1.4CS (Dichlobenil) | Pendulum 2G (Pendimethalin) |
| Casoron 4G (Dichlobenil) | Pennant Magnum (S-Metolachlor) |
| Certainty Turf Herbicide (Monsanto) | Rout (Oxyfluorfen + Oryzalin) |
| (Sulfosulfuron) | |
| Dimension 2EW (Dithiopyr) | Scythe (Pelargonic acid) |
| Dismiss 4F (Sulfentrazone) | Snapshot 2.5TG (Trifluralin + Isoxaben) |
| EXC3898 (Mesotrione + prodiamine & S- | SP1770 Liquid (SP1770) |
| metolachlor) | |
| Fiesta Herbicide (Iron HEDTA) | Suppress T&O Herbicide (Caprylic acid (47%) |
| | + capric acid (32%)) |
| Fireworxx 80 (Caprylic acid (44%) + capric acid | Tower (Dimethenamid-p) |
| (36%)) | |
| Fortress (OHP1701B) (isoxaben + dithiopyr) | V-10233 76WG (Flumioxazin + |
| | pyroxasulfone) |
| Freehand G (Dimethenamid-p + pendimethalin) | V-10142 0.5G (Imazasulfuron) |

Environmental Horticulture Program Research Project Sheet

<https://www.ir4project.org/ehc/ehc-registration-support-research/env-hort-extension-resources/>

| Product Registration and Research Status | | | |
|---|--|--|-------------------------------------|
| | Registration Status (selective) | | Registration Status (non-selective) |
| Labeled & Commercialized Wide range of ornamental horticulture crops listed | Barricade 4FL Biathlon BroadStar 0.25G Dimension 2EW Dismiss 4F Fortress Freehand G | Gallery 75DF Gallery SC Gemini Granular Marengo 74SC Marengo G Pendulum 2G Rout Tower | Axxe |
| Weed not labeled but Commercialized opportunity to add additional weeds (spurges) | Basagran T&O Herbicide Certainty Turf Herbicide Fiesta Herbicide Pennant Magnum Snapshot 2.5TG Suppress T&O Herbicide | | Fireworxx 80 Scythe |
| Labeled & Commercialized Opportunity to add additional ornamental horticulture crops | | | |
| Labeled But NOT Commercialized | | | |
| Not registered or labeled for Ornamental Uses | | | |
| No longer available for development | Casoron 1.4 CS | | |
| * IR-4 Data contributed to registration decision – either adding pest to label or not pursuing further research | | | |
| ¹ At least one crop species screened fully | | | |

IR-4 Efficacy Trials to Date

Average rating on a scale of 1 – 5 where 1 = <60% Control (not effective), 2 = 60-79% control, 3 = 80-89% control, 4 = 90-94% control and 5 = 95-100% control; minimum to maximum rating; number of trials (See table on next page). For product/pest combinations that are blank, IR-4 has not screened this combination. A rating of 3 or higher is considered commercially acceptable. 'Labeled' indicates that this pest species or genera is listed on the label.

Environmental Horticulture Program Research Project Sheet

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| MOA | Product (Actives) | Spurge, Spotted/Prostrate (<i>Chamaesyce maculata</i>) | Spurge (<i>Chamaesyce sp.</i>) |
|----------------------------|--|--|-------------------------------------|
| WSSA 17 | Axxe (Pelargonic acid) | 3.0 (1 - 5) n2 | |
| WSSA 3 | Barricade 4FL (Prodiamine) | 5.0 (5 - 5) n2 | |
| WSSA 6 | Basagran T&O Herbicide (Bentazon) | 1.3 (1 - 2) n3 | 1.0 (1 - 1) n1 |
| WSSA 14 + WSSA 3 | Biathlon (Oxyfluorfen + Prodiamine) | 1.0 (1 - 1) n1 | |
| WSSA 14 | BroadStar 0.25G (Flumioxazin) | | 2.0 (2 - 2) n1 |
| WSSA 14 | BroadStar 0.25G VC1604 (Flumioxazin) | | 2.6 (1 - 5) n9 |
| WSSA 20 | Casoron 1.4CS (Dichlobenil) | | 3.0 (3 - 3) n1 |
| WSSA 20 | Casoron 4G (Dichlobenil) | | 1.0 (1 - 1) n3 Labeled |
| WSSA 2 | Certainty Turf Herbicide (Monsanto) (Sulfosulfuron) | | 2.3 (2 - 3) n3 |
| WSSA 3 | Dimension 2EW (Dithiopyr) | 5.0 (5 - 5) n2 | |
| WSSA 14 | Dismiss 4F (Sulfentrazone) | 1.3 (1 - 2) n3 | 1.0 (1 - 1) n1 Labeled |
| WSSA 27 + WSSA 3 + WSSA 15 | EXC3898 (Mesotrione + prodiamine & S-metolachlor) | | 2.0 (1 - 3) n3 |
| unknown | Fiesta Herbicide (Iron HEDTA) | 2.3 (1 - 5) n3 | 2.0 (2 - 2) n1 |
| unknown | Fireworxx 80 (Caprylic acid (44%) + capric acid (36%)) | 5.0 (5 - 5) n2 | |
| WSSA 21 + WSSA 3 | Fortress (OHP1701B) (isoxaben + dithiopyr) | 4.5 (4 - 5) n2 Labeled | |
| WSSA 15 + WSSA 3 | Freehand G (Dimethenamid-p + pendimethalin) | 3.5 (2 - 5) n2 Labeled | 3.0 (3 - 3) n2 Labeled |
| WSSA 21 | Gallery 75DF (Isoxaben) | | 1.0 (1 - 1) n1 |
| WSSA 21 | Gallery SC (Isoxaben) | | 5.0 (5 - 5) n1 |
| WSSA 3 + WSSA | Gemini Granular (Prodiamine + isoxaben) | 4.0 (3 - 5) n2 | |
| WSSA 14 | HGH-63 2G (Oxyfluorfen) | | 1.7 (1 - 3) n3 |
| WSSA 29 | Marengo 74SC (Indaziflam) | 2.0 (1 - 3) n3 | 3.0 (3 - 3) n2 Labeled |
| WSSA 29 | Marengo G (Indaziflam 0.0224%) | 4.0 (4 - 4) n1 | |
| WSSA 17 | Pendulum 2G (Pendimethalin) | | 4.3 (2 - 5) n4 |

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| MOA | Product (Actives) | Spurge, Spotted/Prostrate (<i>Chamaesyce maculata</i>) | Spurge (<i>Chamaesyce</i> sp.) |
|-------------------|--|--|------------------------------------|
| WSSA 15 | Pennant Magnum (S-Metolachlor) | 4.5 (4 - 5) n2 | |
| WSSA 14 + WSSA 3 | Rout (Oxyfluorfen + Oryzalin) | 2.0 (2 - 2) n1 | |
| WSSA 17 | Scythe (Pelargonic acid) | 5.0 (5 - 5) n1 | |
| WSSA 3 + WSSA 21 | Snapshot 2.5TG (Trifluralin + Isoxaben) | 3.0 (3 - 3) n1 | |
| unknown | SP1770 Liquid (SP1770) | 1.0 (1 - 1) n1 | |
| unknown | Suppress T&O Herbicide (Caprylic acid (47%) + capric acid (32%)) | 5.0 (5 - 5) n1 | |
| WSSA 15 | Tower (Dimethenamid-p) | | 3.0 (2 - 5) n5 Labeled |
| WSSA 2 | V-10142 0.5G (Imazasulfuron) | | 2.3 (1 - 4) n6 |
| WSSA 14 + WSSA 15 | V-10233 76WG (Flumioxazin + pyroxasulfone) | 5.0 (5 - 5) n1 | |