



# Environmental Horticulture Program Research Project Sheet

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

**Project Name:** Pre Emergent Herbicide Crop Safety–Granulars

<b>New</b>	<b>Ongoing</b>	X	<b>Completed</b>		<b>Duration if ongoing or completed:</b>	2004-2023
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### Project Description:

The Pre-Emergent Herbicide Crop Safety Project began in 2004 and has continued through 2019. While specific crops and herbicides have changed, the intent of this research has been to screen over-the-top applications of pre-emergent herbicides as plants are breaking dormancy, or beginning new growth, and then 4 to 6 weeks later once foliage is more mature.

This research project sheet covers granular formulations applied as broadcast, over the top of plants while breaking dormancy and then approximately 6 weeks later.

### Research Project Abstract (if available):

#### **Abstract from 2022 Dimethenamid-p + Pendimethalin Crop Safety Summary**

From 2007 to 2022, IR-4 completed 700 trials on Freehand 1.75G (BAS 659 G; dimethenamid-p + pendimethalin). The data contained in this report was generated to register uses of dimethenamid-p + pendimethalin on and around environmental horticulture plants with broadcast applications, including over the top of established plants. The Freehand rates in this testing program were 2.65, 5.3 and 10.6 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Freehand 1.75G had been applied to 195 plant genera or species. Of these genera and species, 116 exhibited no or minimal transient injury after application at all three rates. Thirteen (13) crops exhibited little or no phytotoxicity at 2.65 lb ai per acre but did have some injury at 5.3 and/or 10.6 lb ai per acre or showed injury after the second application. Seventeen (17) genera or species exhibited damage at the lowest rate sufficient to recommend growers not utilize Freehand 1.75G as an over-the-top treatment for pre-emergent weed control. Twelve (12) crops exhibited variable responses sufficient to recommend further testing of specific species or cultivars. Of the 39 crops which IR-4 has screen in under 3 trials, BASF has sufficient information to include 18 crops on the Freehand 1.75G label. Additional trials are indicated to establish species or cultivar sensitivities for the remaining 21 crops.

#### **Abstract from 2016 Flumioxazin Crop Safety Summary**

Flumioxazin has been registered in the United States since 2003 for uses in and around ornamental plants in production nurseries and in landscapes. Between 2000 and 2013, the IR-4 Project has conducted 618 trials using three granular formulations (BroadStar 0.17G, BroadStar 0.25G and BroadStar 0.25G VC1604) and a wettable dry granular formulation (SureGuard 51WDG). This is the first summary across all the available data for these 4 formulations generated through the IR-4 Project.

Sixty-three plant species or genera exhibited no or minimal transitory phytotoxicity to applications of BroadStar G formulations. Of these, nine are not currently listed on the current BroadStar 0.25G label. It is recommended that these be added to the label. Sixteen crops exhibited significant damage after over the top applications of BroadStar G formulations at all tested rates. Of these, thirteen are not currently in the list of 'Sensitive Species' on the current BroadStar 0.25G label. It is recommended that these be added to the label.

Eleven plant species or genera exhibited no or minimal, transitory phytotoxicity to over the top applications of SureGuard 51WDG formulation; all these are already in the current label. Thirty-three crops demonstrated significant phytotoxicity at all tested rates of SureGuard 51WDG. If a list of 'Sensitive Species' is added to the current label, these crops could be included.

#### **Abstract from 2022 Flumioxazin + Prodiamine Crop Safety Summary**

Fuerte (flumioxazin + prodiamine) has been registered in the United States since 2018. Starting in 2020, the IR-4 Project has been screening additional crops for their tolerance to over the top applications. During 2018

to 2022, 51 crop safety trials on 22 environmental horticulture plant species or genera were conducted. In general, Fuerte exhibited no or minimal negative impact in these trials. Seven plant species or genera fell into this category as did 12 additional crops so far with just 1 or 2 trials completed. For two crop species, there was no or little injury exhibited at the 1X or 2X rates, but significant phytotoxicity occurred at 4X.

***Abstract from 2022 Indaziflam Crop Safety Summary***

From 2011 through 2021, IR-4 has completed 186 trials evaluating two granular and one liquid formulations of indaziflam for crop safety. The data contained in this report was generated to register the use of indaziflam on and around environmental horticulture plants with over-the-top applications. The rates tested were 0.045, 0.089 and 0.178 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. The indaziflam 0.03%G formulation was applied to 17 plant genera or species, the Marengo G formulation applied to 34 crops, and the Marengo 74SC liquid formulation applied to 36 genera or species. Of these crops, 9 exhibited no or minimal transient injury after application with the granular formulations at all three rates including Aucuba japonica, Berberis sp., Liriope sp., Ophiopogon japonicus, Picea abies, Rhododendron sp., Rosa sp., Taxus media and certain Viburnum species. The plants exhibiting no or minimal transient injury with Marengo 74C include: Crocus sp., Hyacinthus sp., Juniperus chinensis, Juniperus horizontalis, and Picea abies. The remaining crops evaluated have only been screened in 1 or two trials or exhibited minimal to significant injury. Further testing is required for additional plant species before a conclusion can be made confirming crop safety.

***Abstract from 2023 Isoxaben + Dithiopyr Crop Safety Summary***

Fortress (isoxaben + dithiopyr) was registered in 2018 for environmental horticulture crop uses. Between 2018 and 2022, IR-4 examined 27 crop species / genera to expand this label to other crops. Of these, 7 crop species exhibited no or transient injury. One species exhibited significant injury from isoxaben + dithiopyr at the 1X rate (*Digitalis grandiflora*).

***Abstract from 2019 Oxyfluorfen + Prodiamine Crop Safety Summary***

From 2009 through 2018, IR-4 completed 246 trials evaluating Biathlon (oxyfluorfen + prodiamine) crop safety to crops grown in field containers. The data contained in this report were generated to register uses of oxyfluorfen + prodiamine as over-the-top applications on and around environmental horticulture plants. The rates tested were 2.75 (1X), 5.5 (2X) and 11.0 (4X) pounds active ingredient per acre (lbai per acre). Biathlon was applied to 130 plant species / genera. Thirty-two species / genera exhibited no or minimal transient injury in at least 3 trials. Results are summarized at the species level, as there is some evidence that crop safety can differ at the varietal level. On the Biathlon label, *Potentilla fruticosa* appears twice: it may be used on the variety 'Abbotswood' but is not recommended on 'Goldfinger'. More data are needed to establish the actual varietal sensitivities within *Potentilla fruticosa* and identify other species with the same difficulty. Based on the data provided here, we recommend that *Acer palmatum*, *Arctostaphylos* sp., *Betula nigra*, *Camelia japonica*, *Chasmanthium latifolium*, *Cornus florida*, *Cornus kousa*, *Cornus sericea*, *Dasiphora fruticosa*, *Dryopteris erythrosora*, *Distylium* sp., *Gladiolus* spp., *Lantana camara*, *Mahonia aquifolium*, *Pachysandra terminalis*, *Quercus rubra*, *Rosmarinus officinalis*, *Rudbeckia* spp., *Salvia nemorosa* and *Sedum* spp. be added to the Biathlon label along with 13 additional varieties of species already listed in the label.

***Abstract from 2022 Oxadiazon Crop Safety Summary***

Oxadiazon has been registered in the United States since the 1970's for uses in and around environmental horticulture plants in production nurseries and in landscapes. Between 1972 and 2021, the IR-4 Project has conducted over 724 trials on 184 plant species or genera using various oxidation formulations: Ronstar 2G, Oxadiazon 4G, Oxadiazon 5G, Ronstar 2EC, Ronstar 50WP/WSP, Ronstar 75WP, and Ronstar Flo. This report is a summary of all the available data generated through IR-4 since screenings began in 1972.

For granular formulations of oxadiazon, fifty-eight (58) plant species or genera exhibited no or minimal,

transitory phytotoxicity to over the top broadcast applications; thirty of these are already in the current Ronstar 2G label. Four species had no or little transient impact with applications at the low rate tested, but impacts were observed at higher rates sufficient for plants to not be marketable. Ten species exhibited significant injury at the 1X rate. For 117 crops, more information is needed because outcomes were variable among tested locations or because only 1 or 2 trials were conducted. Forty-six of these crops are already in the current Ronstar 2G label. Most of the regulatory activity occurred prior to or during the 1990s.

For Oxadiazon EC, five plant genera had no to minimal transitory injury after over the top applications. Three crops were variable in their response either due to species, cultivar or location differences. For 19 genera/species, more information is needed since less than 3 trials were conducted; of these, four crops are already on the Ronstar WSP or Ronstar Flo labels.

With wettable powder or flowable formulations, four plant species or genera exhibited no or minimal, transitory phytotoxicity to over the top applications; all are already in the current Ronstar Flo or 50WP labels. One crop, (*Sedum spurium*), was injured after applications. For 32 genera/species, more information is needed either because only 1 or 2 trials were conducted or because consistent results were not achieved among the research sites. Seven of these crops are already in the current Ronstar Ronstar Flo or 50WP/50WSP labels. The remaining crops exhibited no or minimal transitory injury. Most of the regulatory activity occurred prior to or during the 1990s.

### ***Abstract from 2021 Pendimethalin Crop Safety Summary***

Pendimethalin has been registered in the United States since 1994 for uses in and around environmental horticulture plants in production nurseries and in landscapes. Between 1981 and 2021, the IR-4 Project has conducted 559 trials using two granular formulations (Corral 2.68G and Pendulum 2G), two liquid formulations (Pendulum AquaCap and Prowl 4E) and a wettable dry granular formulation (Pendulum WDG). Between 2014 and 2018, Pendulum 2G was examined for use on ornamental grasses. During 2020 and 2021, Pendulum 2G was a part of a project to examine options for field in-ground cutflower growers. This summary contains data across all the reports available through IR-4 since screenings began in 1981.

Ninety plant species or genera exhibited no or minimal, transitory phytotoxicity to over the top applications of Corral 2.68G and Pendulum 2G formulations (**Error! Reference source not found.**). Seven species exhibited significant injury at the 1X rate (**Error! Reference source not found.**), including many succulent species produced for greenroof installations. For 86 genera/species, more information is needed either because only 1 or 2 trials were conducted or because consistent results were not achieved among the research sites (**Error! Reference source not found.**). The 67 crops with asterisks exhibited no or minimal transitory injury. *Perovskia atriplicifolia*, a crop that is already on the Pendulum 2G label, showed no significant phytotoxicity at 1.5, 3 and 6 lb ai per acre but dry weight decreased significantly with increasing rate. Two other crops in the label, *Rudbeckia hirta* and *Zinnia* sp., showed minor to moderate injury and biomass reduction with 3, 6 and 12 lb ai per acre. For cutflowers grown in ground, *Cosmos* exhibited no injury to Pendulum 2G in 3 trials, while *Solidago* exhibited minor but commercially acceptable injury in 2 out of 3 trials.

### ***Abstract from 2022 Prodiamine + Isoxaben Crop Safety Summary***

Prodiamine + Isoxaben (Gemini G) is a herbicide combination developed by Everris dba ICL Specialty Fertilizers for pre-emergent control of grasses and broadleaf weeds on environmental horticulture crops. The IR-4 Project completed 65 crop safety trials on 23 environmental horticulture plant species or genera between 2017 and 2022. In these trials, four species (*Campanula* sp., *Nepeta x fassiana*, *Quercus virginiana*, *Rosa* sp.) exhibited no injury after over-the-top applications in a minimum of 3 trials; this species can be added to a list of tolerant plants in the new label for this product. Three species (*Phlox paniculata*, *Sedum acre*, *Sedum rupestre*) exhibited



damage at the 1X rate sufficient to recommend growers not utilize Gemini G as an over-the-top treatment for pre-emergent weed control.

**Abstract from 2013 Trifluralin + Isoxaben Crop Safety Summary**

In an effort to provide weed management tools to growers of a wide variety of nursery ornamental crops this research was undertaken to expand the three pre-emergent herbicide labels: Pendulum 2G (pendimethalin), Pennant Magnum (s-metolachlor), and Snapshot 2.5TG (trifluralin + isoxaben). This report covers only Snapshot 2.5TG. The rates chosen for this research were 2.5, 5, and 10 pounds active ingredient per acre (lb ai per acre) as a 1/2X, 1X and 2X rates. From 2004 to 2013, IR-4 completed 418 trials on Snapshot 2.5TG. One hundred forty one crops were examined. Of these, 62 species exhibited no or minimal transient injury after application at all three rates. Eight crops exhibited no phytotoxicity at 2.5 or 5.0 lb ai per acre, but did have some injury at the higher rate of 10 lb ai per acre. Twenty-two species exhibited phytotoxicity at the 5 lb ai per acre rate. For the remaining 59 crops, IR-4 would recommend generating additional data because either fewer than 3 trials were conducted or different locations exhibited different responses.

**Target Species (Phytotoxicity, or common and Latin name of arthropod, pathogen, weed):**

Crop Safety

**Target Crops (list tested crops if ongoing or completed project)**

See "IR-4 Crop Safety to Date" below

**Target Product(s)(list tested products or numbered compounds if ongoing or completed project)**

Biathlon (oxyfluorfen + prodiamine)	Marengo G (indaziflam)
Ronstar G (oxadiazon)	Pendulum 2G (pendimethalin)
Fortress (isoxaben + dithiopyr)	Rout (oxyfluorfen + oryzalin)
Freehand G ( dimethenamid-p + pendimethalin)	Snapshot 2.5TG (trifluralin + isoxaben)
Gemini Granular (prodiamine + isoxaben)	Terracyte (sodium carbonate peroxyhydrate)

**Product Registration and Research Status**

	<b>Registration Status</b>
Labeled & Commercialized Wide range of ornamental horticulture crops listed	Biathlon (oxyfluorfen + prodiamine) Ronstar G (oxadiazon) Fortress (isoxaben + dithiopyr)
Labeled & Commercialized Opportunity to add additional ornamental horticulture crops	Freehand G ( dimethenamid-p + pendimethalin) Gemini Granular (prodiamine + isoxaben) Marengo G (indaziflam) Pendulum 2G (pendimethalin) Rout (oxyfluorfen + oryzalin) Snapshot 2.5TG (trifluralin + isoxaben) Terracyte (sodium carbonate peroxyhydrate)
Labeled But NOT Commercialized	
Not yet registered or labeled	
No longer available for development	
* 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	
2 Product not available for production ornamentals	

PROS	CONS
Additional research could yield data favorable for further label expansion for previously studied herbicides with generally good safety	Succulents – most products in the past have caused injury
Growers requesting a larger plant list	Limited rotational products, trend towards liquid products due to labor
Need more data for woody plants	
Need tropical plants for Florida growers	
Ornamental grasses – still a lot without registrations (still grown in increasing #s)	
Tropical plants & palms – need more rotational options	
Substantial bulb crops – field grown, then division	
Tree nursery production – seedling & cutting propagation	
Herbaceous perennials need additional tools	

**Comments:**

Fortress in process of expanding label

Ronstar: prohibition of use of liquid formulations, reduction of maximum single and annual application rates to 3 and 6 lbs ai/A

Part of this project included preemergent herbicides for in-ground cut flower production. This work is ongoing

**IR-4 Crop Safety Trials to Date**

Average rating on a scale of 1 – 5 with 1 = 0 to about no injury and 5 = severe injury and mortality; minimum to maximum rating; number of trials. A rating of 3 or higher is considered commercially unacceptable (*red text*). A rating of 1 or 2 is considered commercially acceptable and those with more than 3 trials are complete (*green text*). ‘Labeled’ indicates that IR-4 generated data in at least one trial and that this crop is listed on the label. For crop/product combinations that are blank, IR-4 has not screened this combination.

**Table 1. PreHerbicide Product Crop Safety – Granulars**

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Abelia sp.</i>				
<i>Abies fraseri</i>				
<i>Abies sp.</i>				
<i>Acer negundo var. negundo</i>				
<i>Acer platanoides</i>				
<i>Acer rubrum</i>				
<i>Acer saccharinum</i>				
<i>Acer sp.</i>				
<i>Achillea sp.</i>				1.7 (1 - 3) n3
<i>Acorus sp.</i>				
<i>Aesculus glabra</i>				
<i>Aesculus sp.</i>				
<i>Agapanthus sp.</i>	2.0 (1 - 3) n3			
<i>Agastache rupestris</i>				
<i>Agave sp.</i>				
<i>Alchemilla sp.</i>				
<i>Allamanda cathartica</i>				
<i>Allamanda sp.</i>				
<i>Alnus sp.</i>				
<i>Aloe sp.</i>				
<i>Amelanchier canadensis</i>				
<i>Ammophila breviligulata</i>				
<i>Amsonia hubrichtii</i>				
<i>Andropogon gerardii</i>		1.5 (1 - 2) n2		2.0 (1 - 3) n3
<i>Andropogon virginicus</i>				3.0 (3 - 3) n1
<i>Aquilegia sp.</i>				
<i>Arachis sp.</i>				
<i>Araucaria heterophylla</i>	3.0 (3 - 3) n1			
<i>Archontophoenix cunninghamiana</i>				
<i>Arctostaphylos sp.</i>	1.3 (1 - 2) n3			
<i>Arctotheca calendula</i>	2.0 (2 - 2) n1			
<i>Aronia melanocarpa</i>				
<i>Asarum canadense</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Asclepias sp.</i>				
<i>Asparagus densiflorus</i>				
<i>Aster sp.</i>				
<i>Astilbe sp.</i>				
<i>Athyrium nipponicum</i>				
<i>Aucuba sp.</i>				
<i>Aurinia saxatilis</i>				
<i>Baptisia sp.</i>				
<i>Begonia sp.</i>				
<i>Berberis sp.</i>				
<i>Berberis thunbergii</i>				
<i>Berlandiera lyrata</i>	1.0 (1 - 1) n1			
<i>Betula nigra</i>	1.0 (1 - 1) n3			
<i>Betula papyrifera</i>	1.0 (1 - 1) n1			
<i>Betula sp.</i>				
<i>Bougainvillea sp.</i>				
<i>Buxus microphylla</i>				
<i>Buxus sp.</i>				
Cactaceae				
<i>Caladium sp.</i>				
<i>Calamagrostis acutiflora</i>		2.0 (2 - 2) n2		1.0 (1 - 1) n3
<i>Calamagrostis arundinacea</i>				
<i>Callistemon sp.</i>	1.5 (1 - 2) n2			
<i>Calluna sp.</i>	1.5 (1 - 2) n2			
<i>Calycanthus sp.</i>				
<i>Campanula sp.</i>				
<i>Canna x generalis</i>				
<i>Carex buchananii</i>				
<i>Carex cherokeensis</i>				
<i>Carex morrowii</i>				
<i>Carex sp.</i>				
<i>Carya illinoensis</i>				
<i>Cassia sp.</i>	1.0 (1 - 1) n1			
<i>Castanea sativa</i>				
<i>Catharanthus roseus</i>				
<i>Ceanothus x pallida</i>				



Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Cedrus atlantica</i>				
<i>Cercis canadensis</i>				
<i>Cercis occidentalis</i>				
<i>Chamaecyparis obtusa</i>				
<i>Chamaecyparis pisifera</i>				
<i>Chamaecyparis sp.</i>	1.0 (1 - 1) n3			
<i>Chasmanthium latifolium</i>	2.5 (2 - 3) n4			
<i>Chelone sp.</i>				
<i>Chrysanthemum x rubellum</i>	1.0 (1 - 1) n2			
<i>Chrysanthemum/Dendranthema sp.</i>	1.7 (1 - 3) n3			1.0 (1 - 1) n3
<i>Chrysanthemum/Dendranthema x morifolium</i>				
<i>Chrysogonum virginianum</i>				
<i>Citrus sp.</i>	1.0 (1 - 1) n1			
<i>Clematis sp.</i>				
<i>Cleyera japonica</i>	1.0 (1 - 1) n1			
<i>Cocos sp.</i>				
<i>Coreopsis sp.</i>				1.7 (1 - 2) n3
<i>Cornus alternifolia</i>				
<i>Cornus florida</i>				
<i>Cornus kousa</i>				
<i>Cornus racemosa</i>				
<i>Cornus sericea</i>				
<i>Cornus sp.</i>				
<i>Cortaderia selloana</i>				
<i>Cortaderia sp.</i>				
<i>Cosmos sp.</i>				
<i>Cotoneaster apiculatus</i>				
<i>Cotoneaster sp.</i>				
<i>Crassula sp.</i>	3.5 (3 - 4) n2			
<i>Crataegus sp.</i>	1.0 (1 - 1) n3			
<i>Crocus sp.</i>				
<i>Crocus tommasinianus</i>				
<i>Cryptomeria japonica</i>				
<i>Cupressus sempervirens</i>	1.0 (1 - 1) n2			
<i>Cupressus sp.</i>				



Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Cuprocyparis leylandii</i>				
<i>Cycas revoluta</i>				
<i>Cyperus sp.</i>				
<i>Cyrtomium fortunei</i>				
<i>Cytisus sp.</i>	1.0 (1 - 1) n1			
<i>Dahlia sp.</i>				
<i>Delosperma cooperi</i>				
<i>Delosperma sp.</i>	1.3 (1 - 2) n3			
<i>Deschampsia caespitosa</i>				
<i>Dianthus deltoides</i>				
<i>Dianthus gratianopolitanus</i>				2.3 (1 - 5) n3
<i>Digitalis grandiflora</i>				3.3 (1 - 5) n3
<i>Digitalis sp.</i>				
<i>Distylium sp.</i>	1.5 (1 - 3) n4			
<i>Dryopteris cycadina</i>				
<i>Dryopteris erythrosora</i>				
<i>Dryopteris ludoviciana</i>				
<i>Dryopteris sp.</i>	1.3 (1 - 2) n3			
<i>Duranta erecta</i>				2.0 (2 - 2) n1
<i>Dyopsis lutescens</i>				
<i>Echeveria sp.</i>	3.7 (3 - 4) n3			
<i>Echinacea purpurea</i>				
<i>Echinacea sp.</i>	2.0 (2 - 2) n3			
<i>Echinocactus grusonii</i>				
<i>Elaeagnus angustifolia</i>	1.0 (1 - 1) n1			
<i>Enkianthus sp.</i>	1.0 (1 - 1) n1			
<i>Equisetum hyemale</i>				
<i>Eragrostis curvula</i>		1.7 (1 - 2) n3		1.0 (1 - 1) n1
<i>Eragrostis spectabilis</i>				
<i>Erythronium americanum</i>				
<i>Eucalyptus sp.</i>				
<i>Euonymus alatus</i>				
<i>Euonymus fortunei</i>				
<i>Euonymus japonicus</i>				
<i>Euonymus sp.</i>				
<i>Eupatorium maculatum</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Eupatorium sp.</i>				
<i>Euphorbia sp.</i>				
<i>Fagus sp.</i>				
<i>Festuca cinerea</i>				1.0 (1 - 1) n1
<i>Festuca glauca</i>				
<i>Festuca ovina</i>				
<i>Forsythia sp.</i>	1.0 (1 - 1) n3			
<i>Fothergilla gardenii</i>				
<i>Fraxinus sp.</i>				
<i>Fritillaria meleagris</i>				
<i>Gaillardia sp.</i>				
<i>Gardenia sp.</i>				
<i>Gaura lindheimeri</i>				
<i>Ginkgo biloba</i>				
<i>Gladiolus sp.</i>	1.0 (1 - 1) n4			
<i>Gomphrena sp.</i>				
<i>Gymnocalycium baldianum</i>				
<i>Hakonechloa sp.</i>				
<i>Hamelia patens</i>				
<i>Hedera helix</i>	1.0 (1 - 1) n3			
<i>Helianthemum sp.</i>				
<i>Helianthus annuus</i>				
<i>Helictotrichon sp.</i>				
<i>Hemerocallis sp.</i>	2.0 (1 - 4) n3			
<i>Heuchera sanguinea</i>				
<i>Heuchera sp.</i>	2.0 (2 - 2) n1			
<i>Heucherella sp.</i>				
<i>Hibiscus rosa-sinensis</i>				
<i>Hibiscus sp.</i>				
<i>Hibiscus syriacus</i>				
<i>Hierochloe odorata</i>				
<i>Hosta sp.</i>	1.7 (1 - 2) n3			
<i>Hyacinthus orientalis</i>				
<i>Hyacinthus sp.</i>				
<i>Hydrangea macrophylla</i>				1.8 (1 - 3) n4
<i>Hydrangea paniculata</i>				2.0 (1 - 3) n3

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Hydrangea quercifolia</i>				1.7 (1 - 3) n3
<i>Hydrangea sp.</i>				
<i>Hylotelephium sieboldii</i>				
<i>Hylotelephium telephium</i>				
<i>Hypericum sp.</i>	1.3 (1 - 2) n3			
<i>Iberis sp.</i>	1.0 (1 - 1) n3			
<i>Ilex cornuta</i>				
<i>Ilex crenata</i>				
<i>Ilex glabra</i>				
<i>Ilex sp.</i>				
<i>Ilex verticillata</i>				
<i>Ilex x attenuata</i>				
<i>Ilex x meserveae</i>				
<i>Iris sp.</i>	1.0 (1 - 1) n3			
<i>Itea virginica</i>				
<i>Jasminum sp.</i>	1.0 (1 - 1) n2			
<i>Juglans nigra</i>				
<i>Juglans sp.</i>	1.0 (1 - 1) n2			
<i>Juncus effusus</i>		3.5 (3 - 4) n2		1.8 (1 - 3) n4
<i>Juniperus chinensis</i>				
<i>Juniperus communis</i>				
<i>Juniperus horizontalis</i>				
<i>Juniperus sp.</i>				
<i>Juniperus virginiana</i>				
<i>Juniperus x media</i>				
<i>Kalmia sp.</i>				
<i>Kerria japonica</i>	1.7 (1 - 3) n3			
<i>Lagerstroemia indica</i>				
<i>Larix sp.</i>				
<i>Lavandula sp.</i>				
<i>Leucanthemum maximum</i>	2.3 (2 - 3) n3			
<i>Leucanthemum x superbum</i>	2.7 (2 - 3) n3			
<i>Leucothoe sp.</i>				
<i>Leymus arenarius</i>				
<i>Ligustrum lucidum</i>				
<i>Ligustrum sp.</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Lilium Asiatic Hybrids</i>				
<i>Lilium sp.</i>				
<i>Liriope muscari</i>				1.7 (1 - 3) n3
<i>Liriope sp.</i>				
<i>Liriope spicata</i>				
<i>Lonicera sp.</i>	1.0 (1 - 1) n3			
<i>Magnolia grandiflora</i>				
<i>Magnolia sp.</i>				
<i>Mahonia aquifolium</i>	1.0 (1 - 1) n2			
<i>Malus sp.</i>	1.0 (1 - 1) n1			
<i>Mammillaria sp.</i>				
<i>Miscanthus sinensis</i>				
<i>Miscanthus sp.</i>				
<i>Muhlenbergia capillaris</i>		4.0 (4 - 4) n1		1.0 (1 - 1) n4
<i>Muhlenbergia dubia</i>				
<i>Muhlenbergia dumosa</i>				
<i>Muhlenbergia rigens</i>				
<i>Myrica cerifera</i>				
<i>Myrica pensylvanica</i>				
<i>Narcissus sp.</i>	2.3 (2 - 3) n4			
<i>Nassella tenuissima</i>				1.0 (1 - 1) n3
<i>Nepeta x faassenii</i>				
<i>Nerium oleander</i>	1.0 (1 - 1) n1			
<i>Ophiopogon jaburan</i>	1.0 (1 - 1) n1			
<i>Ophiopogon sp.</i>				
<i>Osmanthus heterophyllus</i>				
<i>Osmunda regalis</i>				
<i>Osteospermum sp.</i>	3.0 (3 - 3) n1			
<i>Oxydendrum arboreum</i>	1.0 (1 - 1) n1			
<i>Pachysandra terminalis</i>	1.0 (1 - 1) n3			
<i>Paeonia lactiflora</i>				
<i>Paeonia sp.</i>				
<i>Panicum virgatum</i>				
<i>Pelargonium x domesticum</i>				
<i>Pennisetum alopecuroides</i>				
<i>Pennisetum orientale</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Pennisetum setaceum</i>	1.0 (1 - 1) n1			1.5 (1 - 2) n2
<i>Pennisetum sp.</i>				
<i>Penstemon sp.</i>	2.5 (1 - 4) n4			
<i>Perovskia atriplicifolia</i>				2.0 (1 - 3) n2
<i>Philadelphus sp.</i>				
<i>Phlox paniculata</i>				
<i>Phlox stolonifera</i>				1.0 (1 - 1) n1
<i>Phoenix roebelinii</i>				
<i>Photinia sp.</i>	1.0 (1 - 1) n2			
<i>Physocarpus opulifolius</i>				
<i>Physocarpus sp.</i>				
<i>Picea abies</i>				
<i>Picea glauca</i>				
<i>Picea glauca 'Conica'</i>				
<i>Picea omorika</i>				
<i>Picea sp.</i>	1.7 (1 - 3) n3			
<i>Pieris japonica</i>	1.0 (1 - 1) n1			
<i>Pinus nigra</i>				
<i>Pinus sp.</i>	1.0 (1 - 1) n3			
<i>Pinus strobus</i>				
<i>Pinus sylvestris</i>				
<i>Pinus taeda</i>				
<i>Platanus sp.</i>				
<i>Platycodon grandiflorus</i>				
<i>Polygonatum odoratum</i>				
<i>Populus sp.</i>				
<i>Portulaca grandiflora</i>				
<i>Portulacaria sp.</i>	2.0 (1 - 3) n2			
<i>Prunus laurocerasus</i>				
<i>Prunus serotina</i>				
<i>Prunus sp.</i>	1.3 (1 - 2) n3			
<i>Pseudotsuga menziesii</i>	1.7 (1 - 3) n3			
<i>Pulmonaria sp.</i>				
<i>Pyracantha sp.</i>	1.0 (1 - 1) n2			
<i>Pyrus communis</i>	1.0 (1 - 1) n2			
<i>Quercus acutissima</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Quercus nuttallii</i>				
<i>Quercus palustris</i>	1.0 (1 - 1) n1			
<i>Quercus rubra</i>	1.0 (1 - 1) n1			
<i>Quercus shumardii</i>				
<i>Quercus sp.</i>	1.0 (1 - 1) n2			
<i>Quercus virginiana</i>				
<i>Rhamnus sp.</i>				
<i>Rhaphiolepis indica</i>	1.0 (1 - 1) n1			
<i>Rhodiola pachyclados</i>			4.0 (4 - 4) n2	
<i>Rhododendron sp.</i>	1.2 (1 - 2) n5			
<i>Rosa sp.</i>				
<i>Rosmarinus officinalis</i>	1.0 (1 - 1) n4			
<i>Rubus calycinoïdes</i>				
<i>Rudbeckia fulgida var. speciosa</i>				
<i>Rudbeckia hirta</i>				
<i>Rudbeckia sp.</i>	1.0 (1 - 1) n1			
<i>Rumohra adiantiformis</i>	2.0 (2 - 2) n1			
<i>Sabal minor</i>				
<i>Saccharum ravennae</i>				
<i>Saccharum sp.</i>				
<i>Salix sp.</i>				
<i>Salvia nemorosa</i>	1.3 (1 - 2) n3			
<i>Salvia sp.</i>				2.0 (1 - 3) n2
<i>Sambucus sp.</i>				
<i>Santolina chamaecyparissus</i>	1.3 (1 - 2) n3			
<i>Schizachyrium scoparium</i>				
<i>Sedum acre</i>			2.0 (1 - 3) n3	
<i>Sedum album</i>				
<i>Sedum hybridum</i>			2.5 (1 - 4) n4	
<i>Sedum kamtschaticus</i>			1.8 (1 - 3) n4	
<i>Sedum rupestre</i>			1.3 (1 - 2) n3	
<i>Sedum sexamgulare</i>				
<i>Sedum sp.</i>				
<i>Sedum spathulifolium</i>				
<i>Sedum spurium</i>				
<i>Sempervivum sp.</i>				

Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Solanum sp.</i>				
<i>Solidago caesia</i>				
<i>Solidago sp.</i>				
<i>Solidago speciosa</i>				
<i>Sorghastrum nutans</i>				
<i>Spiraea japonica</i>				
<i>Spiraea sp.</i>				
<i>Sporobolus heterolepis</i>		1.0 (1 - 1) n1		1.0 (1 - 1) n1
<i>Stachys byzantina</i>				
<i>Stipa sp.</i>				
<i>Stokesia sp.</i>				
<i>Stromanthe sp.</i>				
<i>Syringa sp.</i>				
<i>Tagetes erecta</i>				
<i>Taxodium distichum</i>				
<i>Taxus cuspidata</i>				
<i>Taxus sp.</i>				
<i>Taxus X media</i>				
<i>Teucrium chamaedrys</i>				
<i>Thuja occidentalis</i>				
<i>Thuja sp.</i>				
<i>Thymus serpyllum</i>				
<i>Trachelospermum asiaticum</i>	1.0 (1 - 1) n2			
<i>Trachelospermum jasminoides</i>				
<i>Trachycarpus fortunei</i>				
<i>Tsuga canadensis</i>	1.0 (1 - 1) n1			
<i>Tsuga sp.</i>				
<i>Tulbaghia violacea</i>				
<i>Tulipa sp.</i>	2.0 (1 - 3) n4			
<i>Ulmus parvifolia</i>				
<i>Ulmus sp.</i>				
<i>Vernonia noveboracensis</i>				
<i>Viburnum sp.</i>				
<i>Vinca major</i>				
<i>Vinca minor</i>				2.0 (2 - 2) n1
<i>Vinca sp.</i>	1.7 (1 - 3) n3			



Crop	Biathlon (Oxyfluorfen + Prodiamine)	BroadStar 0_25G VC1604 (Flumioxazin)	Chipco Ronstar 2G (Oxadiazon)	Fortress (OHP1701B) (isoxaben + dithiopyr)
<i>Washingtonia robusta</i>				
<i>Wisteria sp.</i>				
<i>Wodyetia bifurcata</i>				
<i>Zelkova serrata</i>				
<i>Zephyranthes sp.</i>				
<i>Zinnia angustifolia</i>				
<i>Zinnia sp.</i>				

**Table 2. PreHerbicide Product Crop Safety – Granulars**

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Abelia sp.</i>		1.3 (1 - 2) n3		
<i>Abies fraseri</i>				
<i>Abies sp.</i>				
<i>Acer negundo var. negundo</i>	1.0 (1 - 1) n1			
<i>Acer platanoides</i>				
<i>Acer rubrum</i>			2.0 (1 - 5) n4	
<i>Acer saccharinum</i>				
<i>Acer sp.</i>				
<i>Achillea sp.</i>				
<i>Acorus sp.</i>				
<i>Aesculus glabra</i>				
<i>Aesculus sp.</i>	1.0 (1 - 1) n1			
<i>Agapanthus sp.</i>				
<i>Agastache rupestris</i>				
<i>Agave sp.</i>	1.5 (1 - 2) n2			3.0 (3 - 3) n1
<i>Alchemilla sp.</i>				
<i>Allamanda cathartica</i>	2.0 (2 - 2) n1			
<i>Allamanda sp.</i>			1.0 (1 - 1) n1	
<i>Alnus sp.</i>	2.0 (2 - 2) n1			
<i>Aloe sp.</i>	1.5 (1 - 2) n2			4.0 (4 - 4) n1
<i>Amelanchier canadensis</i>				
<i>Ammophila breviligulata</i>				
<i>Amsonia hubrichtii</i>				
<i>Andropogon gerardii</i>			1.0 (1 - 1) n2	
<i>Andropogon virginicus</i>				
<i>Aquilegia sp.</i>				
<i>Arachis sp.</i>				
<i>Araucaria heterophylla</i>				
<i>Archontophoenix cunninghamiana</i>				
<i>Arctostaphylos sp.</i>	1.0 (1 - 1) n4			
<i>Arctotheca calendula</i>				
<i>Aronia melanocarpa</i>				
<i>Asarum canadense</i>				
<i>Asclepias sp.</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Asparagus densiflorus</i>				
<i>Aster sp.</i>				
<i>Astilbe sp.</i>				
<i>Athyrium nipponicum</i>	1.0 (1 - 1) n2			
<i>Aucuba sp.</i>	1.5 (1 - 2) n2			1.0 (1 - 1) n2
<i>Aurinia saxatilis</i>				
<i>Baptisia sp.</i>			2.0 (2 - 2) n1	
<i>Begonia sp.</i>				
<i>Berberis sp.</i>				1.0 (1 - 1) n1
<i>Berberis thunbergii</i>				
<i>Berlandiera lyrata</i>	1.7 (1 - 3) n3			
<i>Betula nigra</i>				
<i>Betula papyrifera</i>				
<i>Betula sp.</i>				
<i>Bougainvillea sp.</i>				
<i>Buxus microphylla</i>				
<i>Buxus sp.</i>		1.0 (1 - 1) n4		
<i>Cactaceae</i>	1.0 (1 - 1) n3			
<i>Caladium sp.</i>	1.0 (1 - 1) n1			
<i>Calamagrostis acutiflora</i>			1.5 (1 - 2) n2	2.0 (2 - 2) n1
<i>Calamagrostis arundinacea</i>				
<i>Callistemon sp.</i>				
<i>Calluna sp.</i>				
<i>Calycanthus sp.</i>	1.0 (1 - 1) n1			
<i>Campanula sp.</i>	3.0 (3 - 3) n2		1.7 (1 - 3) n3	
<i>Canna x generalis</i>				
<i>Carex buchananii</i>				
<i>Carex cherokeensis</i>				
<i>Carex morrowii</i>				
<i>Carex sp.</i>	2.0 (1 - 3) n2			
<i>Carya illinoensis</i>				
<i>Cassia sp.</i>				
<i>Castanea sativa</i>				
<i>Catharanthus roseus</i>				
<i>Ceanothus x pallida</i>				
<i>Cedrus atlantica</i>	1.0 (1 - 1) n1			

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Cercis canadensis</i>		2.0 (1 - 3) n2		
<i>Cercis occidentalis</i>		1.0 (1 - 1) n1		
<i>Chamaecyparis obtusa</i>				
<i>Chamaecyparis pisifera</i>				
<i>Chamaecyparis sp.</i>				
<i>Chasmanthium latifolium</i>				3.3 (2 - 4) n4
<i>Chelone sp.</i>				
<i>Chrysanthemum x rubellum</i>				
<i>Chrysanthemum/Dendranthema sp.</i>				
<i>Chrysanthemum/Dendranthema x morifolium</i>				
<i>Chrysogonum virginianum</i>	4.0 (4 - 4) n1			
<i>Citrus sp.</i>				
<i>Clematis sp.</i>				
<i>Cleyera japonica</i>				
<i>Cocos sp.</i>				
<i>Coreopsis sp.</i>				
<i>Cornus alternifolia</i>		1.0 (1 - 1) n1		
<i>Cornus florida</i>		1.5 (1 - 2) n2		
<i>Cornus kousa</i>		1.0 (1 - 1) n2		
<i>Cornus racemosa</i>				
<i>Cornus sericea</i>		1.5 (1 - 2) n2		
<i>Cornus sp.</i>				
<i>Cortaderia selloana</i>				
<i>Cortaderia sp.</i>				
<i>Cosmos sp.</i>				
<i>Cotoneaster apiculatus</i>				
<i>Cotoneaster sp.</i>		1.0 (1 - 1) n2		
<i>Crassula sp.</i>	3.0 (3 - 3) n2			
<i>Crataegus sp.</i>				
<i>Crocus sp.</i>				
<i>Crocus tommasinianus</i>				
<i>Cryptomeria japonica</i>				
<i>Cupressus sempervirens</i>				
<i>Cupressus sp.</i>				
<i>Cuprocyparis leylandii</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Cycas revoluta</i>	1.0 (1 - 1) n1			
<i>Cyperus sp.</i>				
<i>Cyrtomium fortunei</i>				
<i>Cytisus sp.</i>				
<i>Dahlia sp.</i>				
<i>Delosperma cooperi</i>				
<i>Delosperma sp.</i>	2.0 (1 - 3) n3			2.0 (1 - 3) n3
<i>Deschampsia caespitosa</i>				
<i>Dianthus deltoides</i>				
<i>Dianthus gratianopolitanus</i>				
<i>Digitalis grandiflora</i>				
<i>Digitalis sp.</i>			2.7 (1 - 4) n3	
<i>Distylium sp.</i>	1.7 (1 - 3) n3		1.0 (1 - 1) n1	
<i>Dryopteris cycadina</i>	4.0 (4 - 4) n1			3.5 (3 - 4) n2
<i>Dryopteris erythrosora</i>	4.0 (4 - 4) n1			
<i>Dryopteris ludoviciana</i>				
<i>Dryopteris sp.</i>				
<i>Duranta erecta</i>	2.5 (2 - 3) n2		2.0 (1 - 3) n2	
<i>Dypsis lutescens</i>	1.5 (1 - 2) n2			
<i>Echeveria sp.</i>	3.5 (3 - 4) n2			
<i>Echinacea purpurea</i>				
<i>Echinacea sp.</i>			2.0 (1 - 3) n3	4.0 (4 - 4) n1
<i>Echinocactus grusonii</i>				
<i>Elaeagnus angustifolia</i>				
<i>Enkianthus sp.</i>				
<i>Equisetum hyemale</i>				
<i>Eragrostis curvula</i>			1.5 (1 - 2) n2	
<i>Eragrostis spectabilis</i>				
<i>Erythronium americanum</i>				
<i>Eucalyptus sp.</i>				
<i>Euonymus alatus</i>			1.3 (1 - 2) n3	
<i>Euonymus fortunei</i>				
<i>Euonymus japonicus</i>				
<i>Euonymus sp.</i>				1.0 (1 - 1) n1
<i>Eupatorium maculatum</i>				
<i>Eupatorium sp.</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Euphorbia sp.</i>				
<i>Fagus sp.</i>	1.7 (1 - 3) n3			
<i>Festuca cinerea</i>				
<i>Festuca glauca</i>				
<i>Festuca ovina</i>				
<i>Forsythia sp.</i>				
<i>Fothergilla gardenii</i>				
<i>Fraxinus sp.</i>				
<i>Fritillaria meleagris</i>				
<i>Gaillardia sp.</i>	2.3 (1 - 5) n3			
<i>Gardenia sp.</i>	2.5 (1 - 3) n4			
<i>Gaura lindheimeri</i>				
<i>Ginkgo biloba</i>				
<i>Gladiolus sp.</i>				
<i>Gomphrena sp.</i>				
<i>Gymnocalycium baldianum</i>	4.0 (4 - 4) n1			
<i>Hakonechloa sp.</i>				
<i>Hamelia patens</i>	2.0 (2 - 2) n1		1.0 (1 - 1) n1	
<i>Hedera helix</i>				
<i>Helianthemum sp.</i>				
<i>Helianthus annuus</i>				
<i>Helictotrichon sp.</i>				
<i>Hemerocallis sp.</i>			1.8 (1 - 3) n4	
<i>Heuchera sanguinea</i>				
<i>Heuchera sp.</i>				
<i>Heucherella sp.</i>				
<i>Hibiscus rosa-sinensis</i>				
<i>Hibiscus sp.</i>				
<i>Hibiscus syriacus</i>				
<i>Hierochloe odorata</i>				
<i>Hosta sp.</i>				
<i>Hyacinthus orientalis</i>				
<i>Hyacinthus sp.</i>				
<i>Hydrangea macrophylla</i>			3.0 (1 - 4) n5	
<i>Hydrangea paniculata</i>				
<i>Hydrangea quercifolia</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Hydrangea sp.</i>			1.4 (1 - 3) n5	
<i>Hylotelephium sieboldii</i>				
<i>Hylotelephium telephium</i>				
<i>Hypericum sp.</i>				
<i>Iberis sp.</i>	3.3 (2 - 4) n3			4.5 (4 - 5) n2
<i>Ilex cornuta</i>				
<i>Ilex crenata</i>				
<i>Ilex glabra</i>				
<i>Ilex sp.</i>				
<i>Ilex verticillata</i>		1.3 (1 - 2) n3		
<i>Ilex x attenuata</i>				
<i>Ilex x meserveae</i>				
<i>Iris sp.</i>				
<i>Itea virginica</i>				
<i>Jasminum sp.</i>				
<i>Juglans nigra</i>				
<i>Juglans sp.</i>				
<i>Juncus effusus</i>	4.0 (4 - 4) n1		2.0 (1 - 3) n3	
<i>Juniperus chinensis</i>				
<i>Juniperus communis</i>				
<i>Juniperus horizontalis</i>				
<i>Juniperus sp.</i>				
<i>Juniperus virginiana</i>				
<i>Juniperus x media</i>				
<i>Kalmia sp.</i>	1.5 (1 - 2) n2			
<i>Kerria japonica</i>				
<i>Lagerstroemia indica</i>				
<i>Larix sp.</i>	1.0 (1 - 1) n2			
<i>Lavandula sp.</i>				
<i>Leucanthemum maximum</i>	3.0 (3 - 3) n1			
<i>Leucanthemum x superbum</i>				
<i>Leucothoe sp.</i>	1.0 (1 - 1) n2			
<i>Leymus arenarius</i>				
<i>Ligustrum lucidum</i>				
<i>Ligustrum sp.</i>		1.0 (1 - 1) n1		
<i>Lilium Asiatic Hybrids</i>				



Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Lilium sp.</i>				
<i>Liriope muscari</i>				
<i>Liriope sp.</i>				
<i>Liriope spicata</i>		2.3 (1 - 3) n3		
<i>Lonicera sp.</i>				
<i>Magnolia grandiflora</i>		2.5 (1 - 4) n2		
<i>Magnolia sp.</i>				
<i>Mahonia aquifolium</i>				
<i>Malus sp.</i>				
<i>Mammillaria sp.</i>				
<i>Miscanthus sinensis</i>				
<i>Miscanthus sp.</i>				
<i>Muhlenbergia capillaris</i>	3.0 (3 - 3) n1		2.0 (2 - 2) n2	
<i>Muhlenbergia dubia</i>	4.0 (4 - 4) n1			
<i>Muhlenbergia dumosa</i>				
<i>Muhlenbergia rigens</i>				
<i>Myrica cerifera</i>		2.5 (1 - 4) n2		
<i>Myrica pensylvanica</i>				
<i>Narcissus sp.</i>				
<i>Nassella tenuissima</i>				
<i>Nepeta x faassenii</i>			2.0 (1 - 3) n3	
<i>Nerium oleander</i>				
<i>Ophiopogon jaburan</i>				
<i>Ophiopogon sp.</i>				
<i>Osmanthus heterophyllus</i>	1.0 (1 - 1) n1			
<i>Osmunda regalis</i>	4.0 (4 - 4) n1			
<i>Osteospermum sp.</i>				
<i>Oxydendrum arboreum</i>				
<i>Pachysandra terminalis</i>				
<i>Paeonia lactiflora</i>			3.0 (1 - 5) n2	
<i>Paeonia sp.</i>	1.0 (1 - 1) n4			1.0 (1 - 1) n2
<i>Panicum virgatum</i>				
<i>Pelargonium x domesticum</i>			1.0 (1 - 1) n2	
<i>Pennisetum alopecuroides</i>				
<i>Pennisetum orientale</i>				
<i>Pennisetum setaceum</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Pennisetum sp.</i>				
<i>Penstemon sp.</i>	1.0 (1 - 1) n4			
<i>Perovskia atriplicifolia</i>				
<i>Philadelphus sp.</i>				
<i>Phlox paniculata</i>			3.5 (3 - 4) n6	
<i>Phlox stolonifera</i>				
<i>Phoenix roebelinii</i>	1.5 (1 - 2) n2			
<i>Photinia sp.</i>				
<i>Physocarpus opulifolius</i>				
<i>Physocarpus sp.</i>				
<i>Picea abies</i>				
<i>Picea glauca</i>				
<i>Picea glauca 'Conica'</i>		1.0 (1 - 1) n2		
<i>Picea omorika</i>				
<i>Picea sp.</i>				
<i>Pieris japonica</i>				
<i>Pinus nigra</i>		1.0 (1 - 1) n2		
<i>Pinus sp.</i>				
<i>Pinus strobus</i>		1.0 (1 - 1) n3		
<i>Pinus sylvestris</i>				
<i>Pinus taeda</i>	1.0 (1 - 1) n2			
<i>Platanus sp.</i>				
<i>Platycodon grandiflorus</i>				
<i>Polygonatum odoratum</i>				
<i>Populus sp.</i>				
<i>Portulaca grandiflora</i>				
<i>Portulacaria sp.</i>	1.5 (1 - 2) n2			
<i>Prunus laurocerasus</i>				
<i>Prunus serotina</i>				
<i>Prunus sp.</i>				
<i>Pseudotsuga menziesii</i>				
<i>Pulmonaria sp.</i>				
<i>Pyracantha sp.</i>				
<i>Pyrus communis</i>				
<i>Quercus acutissima</i>				
<i>Quercus nuttallii</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Quercus palustris</i>				
<i>Quercus rubra</i>				
<i>Quercus shumardii</i>	2.0 (2 - 2) n1			
<i>Quercus sp.</i>	1.0 (1 - 1) n1			
<i>Quercus virginiana</i>	1.0 (1 - 1) n1		1.0 (1 - 1) n3	
<i>Rhamnus sp.</i>				
<i>Rhaphiolepis indica</i>				
<i>Rhodiola pachyclados</i>				
<i>Rhododendron sp.</i>				
<i>Rosa sp.</i>		2.0 (1 - 3) n3	1.7 (1 - 2) n3	
<i>Rosmarinus officinalis</i>				
<i>Rubus calycinooides</i>				
<i>Rudbeckia fulgida var. speciosa</i>	3.7 (3 - 4) n3			
<i>Rudbeckia hirta</i>				
<i>Rudbeckia sp.</i>				3.0 (2 - 4) n4
<i>Rumohra adiantiformis</i>				
<i>Sabal minor</i>	1.0 (1 - 1) n2			
<i>Saccharum ravennae</i>				
<i>Saccharum sp.</i>	3.0 (3 - 3) n2			
<i>Salix sp.</i>				
<i>Salvia nemorosa</i>				
<i>Salvia sp.</i>				
<i>Sambucus sp.</i>	3.0 (1 - 5) n2			
<i>Santolina chamaecyparissus</i>	1.0 (1 - 1) n1			
<i>Schizachyrium scoparium</i>				
<i>Sedum acre</i>	4.0 (4 - 4) n1		3.3 (1 - 5) n3	
<i>Sedum album</i>				
<i>Sedum hybridum</i>			2.0 (1 - 3) n2	
<i>Sedum kamtschaticus</i>				
<i>Sedum rupestre</i>	4.0 (4 - 4) n1		3.3 (1 - 4) n4	
<i>Sedum sexamgulare</i>				
<i>Sedum sp.</i>				
<i>Sedum spathulifolium</i>				
<i>Sedum spurium</i>				
<i>Sempervivum sp.</i>				
<i>Solanum sp.</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Solidago caesia</i>				
<i>Solidago sp.</i>				
<i>Solidago speciosa</i>				
<i>Sorghastrum nutans</i>				
<i>Spiraea japonica</i>		1.7 (1 - 3) n3		
<i>Spiraea sp.</i>				
<i>Sporobolus heterolepis</i>			1.0 (1 - 1) n1	1.0 (1 - 1) n1
<i>Stachys byzantina</i>	2.0 (2 - 2) n1			
<i>Stipa sp.</i>				
<i>Stokesia sp.</i>				
<i>Stromanthe sp.</i>	1.0 (1 - 1) n2			
<i>Syringa sp.</i>				
<i>Tagetes erecta</i>			2.3 (1 - 4) n3	
<i>Taxodium distichum</i>	1.0 (1 - 1) n2			
<i>Taxus cuspidata</i>				
<i>Taxus sp.</i>				
<i>Taxus X media</i>				
<i>Teucrium chamaedrys</i>	3.5 (3 - 4) n2			
<i>Thuja occidentalis</i>				
<i>Thuja sp.</i>				
<i>Thymus serpyllum</i>				
<i>Trachelospermum asiaticum</i>	1.0 (1 - 1) n3			
<i>Trachelospermum jasminoides</i>				
<i>Trachycarpus fortunei</i>	1.0 (1 - 1) n2			
<i>Tsuga canadensis</i>				
<i>Tsuga sp.</i>				
<i>Tulbaghia violacea</i>				
<i>Tulipa sp.</i>				
<i>Ulmus parvifolia</i>				
<i>Ulmus sp.</i>	1.0 (1 - 1) n1			
<i>Vernonia noveboracensis</i>	1.0 (1 - 1) n1			
<i>Viburnum sp.</i>		1.3 (1 - 2) n4		
<i>Vinca major</i>	1.7 (1 - 3) n3	1.0 (1 - 1) n2		
<i>Vinca minor</i>		1.0 (1 - 1) n2		
<i>Vinca sp.</i>				
<i>Washingtonia robusta</i>				

Crop	Freehand G (Dimethenamid-p + pendimethalin)	Fuerte (Flumioxazin + prodiamine)	Gemini Granular (Prodiamine + isoxaben)	Marengo G (Indaziflam 0_0224%)
<i>Wisteria sp.</i>				
<i>Wodyetia bifurcata</i>	1.0 (1 - 1) n1			
<i>Zelkova serrata</i>				
<i>Zephyranthes sp.</i>				
<i>Zinnia angustifolia</i>				
<i>Zinnia sp.</i>				

**Table 3. PreHerbicide Product Crop Safety – Granulars**

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Abelia sp.</i>				
<i>Abies fraseri</i>				
<i>Abies sp.</i>				
<i>Acer negundo var. negundo</i>				
<i>Acer platanoides</i>				
<i>Acer rubrum</i>				
<i>Acer saccharinum</i>				
<i>Acer sp.</i>				
<i>Achillea sp.</i>				
<i>Acorus sp.</i>				
<i>Aesculus glabra</i>				
<i>Aesculus sp.</i>				
<i>Agapanthus sp.</i>				
<i>Agastache rupestris</i>				
<i>Agave sp.</i>				
<i>Alchemilla sp.</i>				
<i>Allamanda cathartica</i>				
<i>Allamanda sp.</i>				
<i>Alnus sp.</i>				
<i>Aloe sp.</i>				
<i>Amelanchier canadensis</i>				
<i>Ammophila breviligulata</i>	1.0 (1 - 1) n3			
<i>Amsonia hubrichtii</i>				
<i>Andropogon gerardii</i>	1.5 (1 - 2) n2			1.0 (1 - 1) n1
<i>Andropogon virginicus</i>				
<i>Aquilegia sp.</i>				
<i>Arachis sp.</i>				
<i>Araucaria heterophylla</i>				
<i>Archontophoenix cunninghamiana</i>				
<i>Arctostaphylos sp.</i>				
<i>Arctotheca calendula</i>				
<i>Aronia melanocarpa</i>				
<i>Asarum canadense</i>				
<i>Asclepias sp.</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Asparagus densiflorus</i>				
<i>Aster sp.</i>	2.0 (2 - 2) n2			
<i>Astilbe sp.</i>				
<i>Athyrium nipponicum</i>				
<i>Aucuba sp.</i>				
<i>Aurinia saxatilis</i>				
<i>Baptisia sp.</i>				
<i>Begonia sp.</i>				
<i>Berberis sp.</i>				
<i>Berberis thunbergii</i>				
<i>Berlandiera lyrata</i>				
<i>Betula nigra</i>				
<i>Betula papyrifera</i>				
<i>Betula sp.</i>				
<i>Bougainvillea sp.</i>				
<i>Buxus microphylla</i>				
<i>Buxus sp.</i>				
Cactaceae				
<i>Caladium sp.</i>				
<i>Calamagrostis acutiflora</i>	1.0 (1 - 1) n3			
<i>Calamagrostis arundinacea</i>				
<i>Callistemon sp.</i>				
<i>Calluna sp.</i>				
<i>Calycanthus sp.</i>				
<i>Campanula sp.</i>				
<i>Canna x generalis</i>				
<i>Carex buchananii</i>	1.0 (1 - 1) n3			
<i>Carex cherokeensis</i>	1.0 (1 - 1) n3			
<i>Carex morrowii</i>	1.3 (1 - 2) n3			3.0 (3 - 3) n1
<i>Carex sp.</i>				
<i>Carya illinoensis</i>				
<i>Cassia sp.</i>				
<i>Castanea sativa</i>				
<i>Catharanthus roseus</i>				
<i>Ceanothus x pallida</i>				
<i>Cedrus atlantica</i>				



Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Cercis canadensis</i>				
<i>Cercis occidentalis</i>				
<i>Chamaecyparis obtusa</i>				
<i>Chamaecyparis pisifera</i>				
<i>Chamaecyparis sp.</i>				
<i>Chasmanthium latifolium</i>	1.3 (1 - 2) n4			
<i>Chelone sp.</i>				
<i>Chrysanthemum x rubellum</i>				
<i>Chrysanthemum/Dendranthema sp.</i>				
<i>Chrysanthemum/Dendranthema x morifolium</i>				
<i>Chrysogonum virginianum</i>				
<i>Citrus sp.</i>				
<i>Clematis sp.</i>				
<i>Cleyera japonica</i>				
<i>Cocos sp.</i>				
<i>Coreopsis sp.</i>				
<i>Cornus alternifolia</i>				
<i>Cornus florida</i>				
<i>Cornus kousa</i>				
<i>Cornus racemosa</i>				
<i>Cornus sericea</i>				
<i>Cornus sp.</i>				
<i>Cortaderia selloana</i>				
<i>Cortaderia sp.</i>				
<i>Cosmos sp.</i>	1.3 (1 - 2) n3			
<i>Cotoneaster apiculatus</i>				
<i>Cotoneaster sp.</i>				
<i>Crassula sp.</i>				
<i>Crataegus sp.</i>				
<i>Crocus sp.</i>				
<i>Crocus tommasinianus</i>				
<i>Cryptomeria japonica</i>				
<i>Cupressus sempervirens</i>				
<i>Cupressus sp.</i>				
<i>Cuprocyparis leylandii</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Cycas revoluta</i>				
<i>Cyperus sp.</i>				
<i>Cyrtomium fortunei</i>	<b>2.0 (2 - 2) n1</b>			
<i>Cytisus sp.</i>				
<i>Dahlia sp.</i>	<b>3.0 (3 - 3) n1</b>			
<i>Delosperma cooperi</i>		<b>1.0 (1 - 1) n1</b>		
<i>Delosperma sp.</i>				
<i>Deschampsia caespitosa</i>	<b>1.7 (1 - 3) n3</b>			
<i>Dianthus deltoides</i>				
<i>Dianthus gratianopolitanus</i>				
<i>Digitalis grandiflora</i>				
<i>Digitalis sp.</i>				
<i>Distylium sp.</i>			<b>1.0 (1 - 1) n1</b>	
<i>Dryopteris cycadina</i>				
<i>Dryopteris erythrosora</i>				
<i>Dryopteris ludoviciana</i>				
<i>Dryopteris sp.</i>				
<i>Duranta erecta</i>				
<i>Dyopsis lutescens</i>				
<i>Echeveria sp.</i>				
<i>Echinacea purpurea</i>	<b>1.0 (1 - 1) n2</b>			
<i>Echinacea sp.</i>			<b>1.0 (1 - 1) n1</b>	
<i>Echinocactus grusonii</i>				
<i>Elaeagnus angustifolia</i>				
<i>Enkianthus sp.</i>				
<i>Equisetum hyemale</i>				
<i>Eragrostis curvula</i>	<b>1.0 (1 - 1) n3</b>			
<i>Eragrostis spectabilis</i>	<b>1.5 (1 - 2) n2</b>			<b>1.0 (1 - 1) n1</b>
<i>Erythronium americanum</i>				
<i>Eucalyptus sp.</i>				
<i>Euonymus alatus</i>				
<i>Euonymus fortunei</i>				
<i>Euonymus japonicus</i>				
<i>Euonymus sp.</i>				
<i>Eupatorium maculatum</i>				
<i>Eupatorium sp.</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Euphorbia sp.</i>				
<i>Fagus sp.</i>				
<i>Festuca cinerea</i>				
<i>Festuca glauca</i>				
<i>Festuca ovina</i>				
<i>Forsythia sp.</i>				
<i>Fothergilla gardenii</i>				
<i>Fraxinus sp.</i>				
<i>Fritillaria meleagris</i>				
<i>Gaillardia sp.</i>				
<i>Gardenia sp.</i>				
<i>Gaura lindheimeri</i>				
<i>Ginkgo biloba</i>				
<i>Gladiolus sp.</i>				
<i>Gomphrena sp.</i>				
<i>Gymnocalycium baldianum</i>				
<i>Hakonechloa sp.</i>	1.0 (1 - 1) n1			
<i>Hamelia patens</i>				
<i>Hedera helix</i>				
<i>Helianthemum sp.</i>				
<i>Helianthus annuus</i>	2.7 (2 - 3) n3			
<i>Helictotrichon sp.</i>				
<i>Hemerocallis sp.</i>			1.0 (1 - 1) n1	
<i>Heuchera sanguinea</i>				
<i>Heuchera sp.</i>				
<i>Heucherella sp.</i>				
<i>Hibiscus rosa-sinensis</i>				
<i>Hibiscus sp.</i>				
<i>Hibiscus syriacus</i>				
<i>Hierochloe odorata</i>	1.0 (1 - 1) n1			
<i>Hosta sp.</i>				
<i>Hyacinthus orientalis</i>				
<i>Hyacinthus sp.</i>				
<i>Hydrangea macrophylla</i>				
<i>Hydrangea paniculata</i>				
<i>Hydrangea quercifolia</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Hydrangea sp.</i>			1.0 (1 - 1) n1	
<i>Hylotelephium sieboldii</i>	3.5 (2 - 5) n2			
<i>Hylotelephium telephium</i>				
<i>Hypericum sp.</i>				
<i>Iberis sp.</i>				
<i>Ilex cornuta</i>				
<i>Ilex crenata</i>				
<i>Ilex glabra</i>				
<i>Ilex sp.</i>				
<i>Ilex verticillata</i>				
<i>Ilex x attenuata</i>				
<i>Ilex x meserveae</i>				
<i>Iris sp.</i>				
<i>Itea virginica</i>				
<i>Jasminum sp.</i>				
<i>Juglans nigra</i>				
<i>Juglans sp.</i>				
<i>Juncus effusus</i>	1.0 (1 - 1) n3		1.0 (1 - 1) n1	1.0 (1 - 1) n1
<i>Juniperus chinensis</i>				
<i>Juniperus communis</i>				
<i>Juniperus horizontalis</i>				
<i>Juniperus sp.</i>				
<i>Juniperus virginiana</i>				
<i>Juniperus x media</i>				
<i>Kalmia sp.</i>				
<i>Kerria japonica</i>				
<i>Lagerstroemia indica</i>				
<i>Larix sp.</i>				
<i>Lavandula sp.</i>				
<i>Leucanthemum maximum</i>				
<i>Leucanthemum x superbum</i>				
<i>Leucothoe sp.</i>				
<i>Leymus arenarius</i>	1.0 (1 - 1) n3			
<i>Ligustrum lucidum</i>				
<i>Ligustrum sp.</i>				
<i>Lilium Asiatic Hybrids</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Lilium sp.</i>				
<i>Liriope muscari</i>				
<i>Liriope sp.</i>				
<i>Liriope spicata</i>				
<i>Lonicera sp.</i>				
<i>Magnolia grandiflora</i>				
<i>Magnolia sp.</i>				
<i>Mahonia aquifolium</i>				
<i>Malus sp.</i>				
<i>Mammillaria sp.</i>				
<i>Miscanthus sinensis</i>				
<i>Miscanthus sp.</i>				
<i>Muhlenbergia capillaris</i>	1.0 (1 - 1) n3		2.0 (2 - 2) n1	3.0 (3 - 3) n1
<i>Muhlenbergia dubia</i>	1.0 (1 - 1) n2			
<i>Muhlenbergia dumosa</i>	1.7 (1 - 2) n3			
<i>Muhlenbergia rigens</i>				
<i>Myrica cerifera</i>				
<i>Myrica pensylvanica</i>				
<i>Narcissus sp.</i>			1.0 (1 - 1) n2	
<i>Nassella tenuissima</i>	2.7 (1 - 4) n3			2.0 (2 - 2) n1
<i>Nepeta x faassenii</i>				
<i>Nerium oleander</i>				
<i>Ophiopogon jaburan</i>				
<i>Ophiopogon sp.</i>				
<i>Osmanthus heterophyllus</i>				
<i>Osmunda regalis</i>				
<i>Osteospermum sp.</i>				
<i>Oxydendrum arboreum</i>				
<i>Pachysandra terminalis</i>				
<i>Paeonia lactiflora</i>				
<i>Paeonia sp.</i>				
<i>Panicum virgatum</i>	1.3 (1 - 2) n3			1.0 (1 - 1) n1
<i>Pelargonium x domesticum</i>				
<i>Pennisetum alopecuroides</i>	1.0 (1 - 1) n3			
<i>Pennisetum orientale</i>	1.8 (1 - 2) n4			2.0 (2 - 2) n2
<i>Pennisetum setaceum</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Pennisetum sp.</i>				
<i>Penstemon sp.</i>				
<i>Perovskia atriplicifolia</i>				
<i>Philadelphus sp.</i>				
<i>Phlox paniculata</i>	4.0 (4 - 4) n1			
<i>Phlox stolonifera</i>				
<i>Phoenix roebelinii</i>				
<i>Photinia sp.</i>				
<i>Physocarpus opulifolius</i>				
<i>Physocarpus sp.</i>				
<i>Picea abies</i>				
<i>Picea glauca</i>				
<i>Picea glauca 'Conica'</i>				
<i>Picea omorika</i>				
<i>Picea sp.</i>				
<i>Pieris japonica</i>				
<i>Pinus nigra</i>				
<i>Pinus sp.</i>				
<i>Pinus strobus</i>				
<i>Pinus sylvestris</i>				
<i>Pinus taeda</i>				
<i>Platanus sp.</i>				
<i>Platycodon grandiflorus</i>				
<i>Polygonatum odoratum</i>				
<i>Populus sp.</i>				
<i>Portulaca grandiflora</i>				
<i>Portulacaria sp.</i>				
<i>Prunus laurocerasus</i>				
<i>Prunus serotina</i>				
<i>Prunus sp.</i>				
<i>Pseudotsuga menziesii</i>				
<i>Pulmonaria sp.</i>				
<i>Pyracantha sp.</i>				
<i>Pyrus communis</i>				
<i>Quercus acutissima</i>				
<i>Quercus nuttallii</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Quercus palustris</i>				
<i>Quercus rubra</i>				
<i>Quercus shumardii</i>				
<i>Quercus sp.</i>				
<i>Quercus virginiana</i>				
<i>Rhamnus sp.</i>				
<i>Rhaphiolepis indica</i>				
<i>Rhodiola pachyclados</i>	3.7 (3 - 4) n3			
<i>Rhododendron sp.</i>				
<i>Rosa sp.</i>				
<i>Rosmarinus officinalis</i>				
<i>Rubus calycinooides</i>				
<i>Rudbeckia fulgida var. speciosa</i>				
<i>Rudbeckia hirta</i>	1.7 (1 - 3) n3			
<i>Rudbeckia sp.</i>				
<i>Rumohra adiantiformis</i>				
<i>Sabal minor</i>				
<i>Saccharum ravennae</i>				
<i>Saccharum sp.</i>	1.0 (1 - 1) n3			
<i>Salix sp.</i>				
<i>Salvia nemorosa</i>				
<i>Salvia sp.</i>				
<i>Sambucus sp.</i>				
<i>Santolina chamaecyparissus</i>			1.0 (1 - 1) n1	
<i>Schizachyrium scoparium</i>	1.8 (1 - 3) n4			
<i>Sedum acre</i>	2.3 (1 - 3) n4			
<i>Sedum album</i>				
<i>Sedum hybridum</i>	3.0 (2 - 4) n4			
<i>Sedum kamtschaticus</i>	2.5 (1 - 4) n4			
<i>Sedum rupestre</i>	2.3 (1 - 4) n3			
<i>Sedum sexamgulare</i>	3.3 (2 - 5) n3			
<i>Sedum sp.</i>				
<i>Sedum spathulifolium</i>				
<i>Sedum spurium</i>	2.0 (1 - 3) n3			
<i>Sempervivum sp.</i>				
<i>Solanum sp.</i>				



Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Solidago caesia</i>				
<i>Solidago sp.</i>	1.7 (1 - 2) n3			
<i>Solidago speciosa</i>				
<i>Sorghastrum nutans</i>	1.3 (1 - 2) n3			
<i>Spiraea japonica</i>				
<i>Spiraea sp.</i>				
<i>Sporobolus heterolepis</i>	1.0 (1 - 1) n3			
<i>Stachys byzantina</i>				
<i>Stipa sp.</i>				
<i>Stokesia sp.</i>				
<i>Stromanthe sp.</i>				
<i>Syringa sp.</i>				
<i>Tagetes erecta</i>				
<i>Taxodium distichum</i>				
<i>Taxus cuspidata</i>				
<i>Taxus sp.</i>				
<i>Taxus X media</i>				
<i>Teucrium chamaedrys</i>				
<i>Thuja occidentalis</i>				
<i>Thuja sp.</i>				
<i>Thymus serpyllum</i>				
<i>Trachelospermum asiaticum</i>				
<i>Trachelospermum jasminoides</i>				
<i>Trachycarpus fortunei</i>				
<i>Tsuga canadensis</i>				
<i>Tsuga sp.</i>				
<i>Tulbaghia violacea</i>				
<i>Tulipa sp.</i>			1.0 (1 - 1) n2	
<i>Ulmus parvifolia</i>				
<i>Ulmus sp.</i>				
<i>Vernonia noveboracensis</i>				
<i>Viburnum sp.</i>				
<i>Vinca major</i>				
<i>Vinca minor</i>				
<i>Vinca sp.</i>				
<i>Washingtonia robusta</i>				

Crop	Pendulum 2G (Pendimethalin)	Rout (Oxyfluorfen + Oryzalin)	Snapshot 2_5TG (Trifluralin + Isoxaben)	SP1770 Granular (SP1770)
<i>Wisteria sp.</i>				
<i>Wodyetia bifurcata</i>				
<i>Zelkova serrata</i>				
<i>Zephyranthes sp.</i>				
<i>Zinnia angustifolia</i>				
<i>Zinnia sp.</i>	2.0 (1 - 3) n2			