



[Environmental Horticulture Program Research Summaries](#)

IR-4 Environmental Horticulture Program Flumioxazin Crop Safety

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Acknowledgements

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Abstract

Flumioxazin has been registered in the United States since 2003 for uses in and around environmental horticulture plants in production nurseries and in landscapes. Between 2000 and 2023, the IR-4 Project has conducted 641 trials using three granular formulations (BroadStar 0.17G, BroadStar 0.25G and BroadStar 0.25G VC1604) and a wettable dry granular formulation (SureGuard 51WDG). During these trials, 168 crop species or genera were studied, although not all crops with all formulations: 149 with BroadStar formulations and 75 with SureGuard 51WDG). Sixty-seven plant species or genera exhibited no or minimal transitory phytotoxicity to applications of BroadStar G formulations. Twenty-five are not currently on the commercial BroadStar 0.25G registered label and can be added. For SureGuard 51WDG, seven plant species or genera exhibited no or minimal, transitory phytotoxicity to over-the-top applications; all these are already in the current label. Seven crops demonstrated significant phytotoxicity at all tested rates of SureGuard 51WDG with 3 or more trials. Twenty-four other crops exhibited significant injury in one or two trials. If a list of 'Sensitive Species' is added to the current label, these crops could be included.

Introduction

Flumioxazin (BroadStar 0.25G and SureGuard 51WDG) has been registered in the United States since 2003 for uses in and around environmental horticulture plants in production nurseries and in landscapes. Between 2000 and 2023, the IR-4 Project has conducted 641 trials using three granular formulations (BroadStar 0.17G, BroadStar 0.25G and BroadStar 0.25G VC1604) and a wettable dry granular formulation (SureGuard 51WDG). The BroadStar 0.25G original formulation was replaced in the marketplace by BroadStar 0.25G VC1604, the formulation currently available for growers.

Materials and Methods

Because this research was conducted over several years with different protocols, application rates and whether repeat applications were made varied. Rates ranged from 0.17 to 1.5 lb ai per acre and either 1 or 2 applications were made. A minimum of four plants (replicate treatments) were required with many researchers exceeding this minimum. Phytotoxicity was recorded using a scale of 0 to 10 (0 = No phytotoxicity; 10 = Complete kill) at approximately 1, 2, 4, 7, 8 and 10 weeks after initial application. The protocols used were 05-001, 06-011, 07-009, 08-010, 09-011, 10-001, 11-004, 12-015, 13-015, 22-017, 23-017, and 24-012. 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.

BroadStar 0.17G, BroadStar 0.25G, BroadStar 0.25G VC1604 and SureGuard 51WDG were supplied to researchers (See list of researchers in Appendix 1) by Valent Corporation and NuFarm.

Results and Summary

Phytotoxicity

Based on the type and nature of injury seen with flumioxazin applications in the conducted research, tested plant species were placed into five 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 sufficient to recommend growers not utilize this product, 4) more data is needed to make informed recommendations because variable responses were observed among trials which could be due to cultivar, environmental conditions or other factors, and 5) less than three trials have been conducted.

During these trials, 168 crop species or genera were studied, although not all crops with all formulations: 149 with BroadStar formulations and 75 with SureGuard 51WDG (Table 1). No or minimal transitory phytotoxicity to applications of BroadStar G formulations was observed in 67 plant species or genera. Seven plant crops exhibited no or minimal, transitory phytotoxicity to over-the-top applications of SureGuard 51WDG formulation; all these are already in the current label. Seven crops demonstrated significant phytotoxicity at all tested rates of SureGuard 51WDG with 3 or more trials. Twenty-four crops exhibited significant injury in one or two trials.

Table 1. Average crop safety rating for flumioxazin formulations.

Crop Latin Name	BroadStar 0.17G	BroadStar 0.25G	BroadStar 0.25G VC1604		SureGuard 51WDG	
	Broadcast	Broadcast	Broadcast	Directed	Directed	Over the top
<i>Abelia sp.</i>	1.3 (1 - 2) n3		1.0 (1 - 1) n4			
<i>Abies balsamea</i>						1.5 (1 - 3) n4
<i>Abies fraseri</i>						1.5 (1 - 3) n6
<i>Abies grandis</i>						2.0 (2 - 2) n1
<i>Abies lasiocarpa</i>						1.0 (1 - 1) n1
<i>Abies sp.</i>	1.0 (1 - 1) n1		1.0 (1 - 1) n3	1.0 (1 - 1) n1		2.5 (2 - 3) n2
<i>Acer ginnala</i>	1.0 (1 - 1) n1					
<i>Acer palmatum</i>	1.0 (1 - 1) n1	1.0 (1 - 1) n2	1.0 (1 - 1) n4			
<i>Acer rubrum</i>			1.3 (1 - 2) n3			2.0 (1 - 3) n2
<i>Acer sp.</i>		1.0 (1 - 1) n4	1.3 (1 - 2) n4		1.0 (1 - 1) n2	
<i>Achillea millefolium</i>	4.0 (3 - 5) n2					2.0 (2 - 2) n1
<i>Agapanthus sp.</i>			1.8 (1 - 3) n4			
<i>Andropogon gerardii</i>			2.0 (1 - 3) n3			
<i>Andropogon virginicus</i>			1.0 (1 - 1) n1			
<i>Artemisia lactiflora</i>	1.0 (1 - 1) n2	1.0 (1 - 1) n1				
<i>Athyrium goeringianum</i>		3.0 (3 - 3) n1				
<i>Berberis sp.</i>	1.2 (1 - 2) n6	1.0 (1 - 1) n2	1.0 (1 - 1) n4			
<i>Berberis thunbergii</i>						3.8 (3 - 4) n4
<i>Betula nigra</i>					1.0 (1 - 1) n1	
<i>Buddleia davidii</i>	1.6 (1 - 3) n5		1.0 (1 - 1) n3		1.0 (1 - 1) n1	
<i>Buxus microphylla</i>	1.2 (1 - 2) n6					3.5 (3 - 4) n2
<i>Buxus sp.</i>	1.0 (1 - 1) n2		1.5 (1 - 2) n2			2.5 (2 - 3) n2
<i>Calamagrostis acutiflora</i>			2.0 (2 - 2) n3			
<i>Calluna sp.</i>	1.0 (1 - 1) n1					
<i>Camellia sp.</i>		1.0 (1 - 1) n1	1.0 (1 - 1) n4			
<i>Carex divulsa</i>			2.0 (1 - 3) n2			
<i>Carex sp.</i>	1.0 (1 - 1) n1	1.0 (1 - 1) n1				
<i>Caryopteris x clandonensis</i>			1.0 (1 - 1) n1			
<i>Ceanothus maritimus</i>			1.7 (1 - 3) n3			
<i>Ceanothus sp.</i>			1.5 (1 - 2) n2			
<i>Ceanothus x pallida</i>			1.0 (1 - 1) n2			
<i>Cedrus deodara</i>		1.0 (1 - 1) n1				1.0 (1 - 1) n1
<i>Cerastium tomentosum</i>	3.0 (3 - 3) n1					

Crop Latin Name	BroadStar 0.17G	BroadStar 0.25G	BroadStar 0.25G VC1604		SureGuard 51WDG	
	Broadcast	Broadcast	Broadcast	Directed	Directed	Over the top
<i>Ceratiola ericoides</i>					1.0 (1 - 1) n1	
<i>Chamaecyparis obtusa</i>		1.0 (1 - 1) n1				1.0 (1 - 1) n2
<i>Chrysanthemum/Dendranthema sp.</i>		1.0 (1 - 1) n1				
<i>Clematis sp.</i>			1.0 (1 - 1) n4			
<i>Clethra alnifolia</i>	1.0 (1 - 1) n1	2.0 (2 - 2) n3	2.0 (1 - 3) n2			2.0 (1 - 3) n2
<i>Cleyera japonica</i>	2.5 (2 - 3) n2					3.0 (3 - 3) n1
<i>Cornus florida</i>	1.0 (1 - 1) n1		1.7 (1 - 3) n3			
<i>Cornus sericea</i>	1.0 (1 - 1) n1					
<i>Cortaderia sp.</i>		2.3 (1 - 3) n4			2.0 (2 - 2) n1	4.0 (4 - 4) n2
<i>Cotinus coggygia</i>					1.0 (1 - 1) n1	
<i>Cotoneaster sp.</i>	1.7 (1 - 3) n3		1.0 (1 - 1) n2			4.0 (4 - 4) n1
<i>Crataegus sp.</i>			1.7 (1 - 2) n3			
<i>Cryptomeria japonica</i>			1.0 (1 - 1) n3			
<i>Cuphea hyssopifolia</i>		4.0 (4 - 4) n1				
<i>Cupressus sp.</i>	1.0 (1 - 1) n1					
<i>Cytisus sp.</i>	1.0 (1 - 1) n1					
<i>Daphne sp.</i>	2.0 (2 - 2) n1					
<i>Delosperma nubigenum</i>	1.0 (1 - 1) n1					
<i>Deschampsia sp.</i>		1.0 (1 - 1) n1				
<i>Deutzia sp.</i>		4.0 (4 - 4) n1			4.0 (4 - 4) n1	
<i>Elaeagnus angustifolia</i>	1.0 (1 - 1) n1					
<i>Epilobium canum</i>			1.0 (1 - 1) n1			
<i>Eragrostis curvula</i>			1.7 (1 - 2) n3			
<i>Erica sp.</i>	1.0 (1 - 1) n1					
<i>Euonymus alatus</i>	1.0 (1 - 1) n1		1.0 (1 - 1) n2			3.0 (2 - 4) n2
<i>Festuca glauca</i>	1.0 (1 - 1) n2	1.0 (1 - 1) n1				1.5 (1 - 2) n2
<i>Forsythia sp.</i>	1.0 (1 - 1) n2		1.0 (1 - 1) n1			4.0 (4 - 4) n1
<i>Fraxinus sp.</i>	1.0 (1 - 1) n1	1.0 (1 - 1) n1				1.0 (1 - 1) n1
<i>Gardenia sp.</i>		1.5 (1 - 2) n2				
<i>Gazania sp.</i>	1.0 (1 - 1) n1					
<i>Gelsemium sp.</i>	2.0 (2 - 2) n1					
<i>Gleditsia sp.</i>	1.0 (1 - 1) n1		1.0 (1 - 1) n4			
<i>Gypsophila elegans</i>	1.0 (1 - 1) n3					
<i>Hakonechloa sp.</i>	2.0 (2 - 2) n1		1.5 (1 - 2) n2			
<i>Hedera helix</i>	1.0 (1 - 1) n4					1.0 (1 - 1) n1
<i>Helleborus niger</i>		2.0 (2 - 2) n1				4.0 (4 - 4) n2

Crop Latin Name	BroadStar 0.17G	BroadStar 0.25G	BroadStar 0.25G VC1604		SureGuard 51WDG	
	Broadcast	Broadcast	Broadcast	Directed	Directed	Over the top
<i>Hemerocallis sp.</i>	2.3 (1 - 4) n8					3.0 (2 - 4) n3
<i>Heteromeles arbutifolia</i>			2.0 (2 - 2) n1			
<i>Hibiscus sp.</i>						4.0 (4 - 4) n1
<i>Hosta sp.</i>	4.0 (4 - 4) n3					2.5 (1 - 4) n2
<i>Hydrangea macrophylla</i>						4.0 (4 - 4) n2
<i>Hydrangea sp.</i>	2.7 (1 - 4) n3	3.0 (2 - 4) n3	1.7 (1 - 3) n3			3.7 (3 - 4) n3
<i>Hylotelephium sieboldii</i>			4.0 (4 - 4) n1			
<i>Iberis sp.</i>	1.0 (1 - 1) n2					4.0 (4 - 4) n1
<i>Ilex crenata</i>	1.3 (1 - 2) n4					3.0 (2 - 4) n2
<i>Ilex sp.</i>	2.0 (1 - 4) n6	1.0 (1 - 1) n1	1.0 (1 - 1) n4			3.0 (3 - 3) n1
<i>Ilex vomitoria</i>						4.0 (4 - 4) n1
<i>Ilex x meserveae</i>	1.3 (1 - 2) n3					3.7 (3 - 4) n3
<i>Jasminum sp.</i>	4.0 (4 - 4) n1					
<i>Juncus effusus</i>			3.0 (1 - 4) n3			
<i>Juniperus conferta</i>	1.0 (1 - 1) n3					
<i>Juniperus horizontalis</i>	1.0 (1 - 1) n3					1.3 (1 - 2) n3
<i>Juniperus sp.</i>	1.0 (1 - 1) n2	1.0 (1 - 1) n1	1.0 (1 - 1) n4			1.0 (1 - 1) n1
<i>Juniperus squamata</i>	1.0 (1 - 1) n3					1.0 (1 - 1) n3
<i>Juniperus virginiana</i>					2.0 (2 - 2) n1	
<i>Lagerstroemia indica</i>	1.5 (1 - 2) n2	1.0 (1 - 1) n2	1.0 (1 - 1) n4			4.0 (4 - 4) n1
<i>Lantana sp.</i>		1.5 (1 - 2) n2				
<i>Lavandula sp.</i>			1.0 (1 - 1) n4			
<i>Leucothoe sp.</i>			1.0 (1 - 1) n1			
<i>Ligustrum sp.</i>		1.0 (1 - 1) n1	3.0 (3 - 3) n1			
<i>Lilium longiflorum</i>						1.0 (1 - 1) n1
<i>Liriope muscari</i>	1.7 (1 - 4) n6	3.0 (3 - 3) n1				3.0 (2 - 4) n2
<i>Liriope spicata</i>	2.0 (2 - 2) n1	2.0 (2 - 2) n2				4.0 (4 - 4) n1
<i>Lonicera sp.</i>	2.0 (1 - 3) n2					
<i>Loropetalum sp.</i>		1.5 (1 - 2) n2	1.2 (1 - 2) n5			
<i>Magnolia sp.</i>			1.0 (1 - 1) n5			
<i>Mahonia aquifolium</i>	1.0 (1 - 1) n1					
<i>Malus sp.</i>			1.0 (1 - 1) n2			
<i>Muhlenbergia capillaris</i>			3.0 (2 - 4) n3			
<i>Muhlenbergia dubia</i>			1.0 (1 - 1) n1			
<i>Myrica cerifera</i>		2.0 (2 - 2) n1				
<i>Myrica pennsylvanica</i>	1.0 (1 - 1) n1	1.0 (1 - 1) n1				

Crop Latin Name	BroadStar 0.17G	BroadStar 0.25G	BroadStar 0.25G VC1604		SureGuard 51WDG	
	Broadcast	Broadcast	Broadcast	Directed	Directed	Over the top
<i>Nandina domestica</i>	2.0 (2 - 2) n1	4.0 (4 - 4) n1	1.5 (1 - 3) n4		1.0 (1 - 1) n1	3.0 (3 - 3) n1
<i>Nepeta cataria</i>			1.3 (1 - 2) n3			
<i>Nepeta x faassenii</i>			2.3 (1 - 3) n3			
<i>Ophiopogon sp.</i>	2.0 (2 - 2) n1	2.0 (2 - 2) n1	1.0 (1 - 1) n1			
<i>Origanum libanoticum</i>	1.0 (1 - 1) n2					
<i>Osmanthus heterophyllus</i>			1.0 (1 - 1) n1			
<i>Osmunda regalis</i>						4.0 (4 - 4) n1
<i>Osteospermum sp.</i>	1.0 (1 - 1) n1					
<i>Pachysandra terminalis</i>	1.0 (1 - 1) n1					
<i>Paeonia sp.</i>			1.0 (1 - 1) n2			
<i>Pennisetum setaceum</i>	1.0 (1 - 1) n2				3.0 (3 - 3) n1	3.0 (3 - 3) n1
<i>Phalaris arundinacea</i>	3.0 (2 - 4) n2	4.0 (4 - 4) n1			4.0 (4 - 4) n1	
<i>Philadelphus sp.</i>			3.0 (3 - 3) n1			
<i>Phlox sp.</i>		4.0 (4 - 4) n1				
<i>Photinia sp.</i>			1.0 (1 - 1) n1			
<i>Picea sp.</i>	1.0 (1 - 1) n1	1.0 (1 - 1) n2	1.0 (1 - 1) n3			2.5 (2 - 3) n2
<i>Pieris sp.</i>	1.3 (1 - 2) n3	1.0 (1 - 1) n1	1.0 (1 - 1) n2		1.0 (1 - 1) n1	4.0 (4 - 4) n1
<i>Pinus mugo</i>	1.0 (1 - 1) n2	1.0 (1 - 1) n1				1.0 (1 - 1) n1
<i>Pinus nigra</i>		1.5 (1 - 2) n2			1.0 (1 - 1) n1	1.0 (1 - 1) n1
<i>Pinus sp.</i>	1.0 (1 - 1) n1		1.0 (1 - 1) n4			1.0 (1 - 1) n1
<i>Pinus thunbergiana</i>						1.0 (1 - 1) n1
<i>Pittosporum tobira</i>	2.0 (2 - 2) n1					
<i>Podocarpus macrophyllus</i>		1.0 (1 - 1) n1				
<i>Potentilla sp.</i>	1.3 (1 - 2) n4		1.4 (1 - 2) n5			3.5 (3 - 4) n2
<i>Prunus dulcis</i>	1.0 (1 - 1) n1					
<i>Prunus sp.</i>	1.0 (1 - 1) n2					
<i>Pseudotsuga menziesii</i>	1.0 (1 - 1) n2					
<i>Quercus rubra</i>	1.0 (1 - 1) n2					2.0 (1 - 4) n3
<i>Quercus sp.</i>			1.0 (1 - 1) n2	2.0 (2 - 2) n1		1.0 (1 - 1) n2
<i>Rhaphiolepis indica</i>			1.0 (1 - 1) n3			
<i>Rhododendron sp.</i>	1.9 (1 - 4) n17	1.3 (1 - 2) n4	1.0 (1 - 1) n5		1.0 (1 - 1) n1	3.9 (3 - 5) n8
<i>Rhus sp.</i>	1.0 (1 - 1) n1					
<i>Ribes viburnifolium</i>			1.0 (1 - 1) n1			
<i>Rosa sp.</i>		1.0 (1 - 1) n1	1.2 (1 - 2) n5			3.0 (2 - 4) n3
<i>Rosmarinus officinalis</i>		1.0 (1 - 1) n1				
<i>Rudbeckia fulgida var. speciosa</i>						2.7 (1 - 5) n3

Crop Latin Name	BroadStar 0.17G	BroadStar 0.25G	BroadStar 0.25G VC1604		SureGuard 51WDG	
	Broadcast	Broadcast	Broadcast	Directed	Directed	Over the top
<i>Ruellia caroliniensis</i>		4.0 (4 - 4) n1				
<i>Sabal minor</i>			1.0 (1 - 1) n1			
<i>Salvia daghestanica</i>	1.0 (1 - 1) n2					
<i>Salvia x sylvestris</i>	2.0 (2 - 2) n1	1.0 (1 - 1) n1	1.8 (1 - 3) n4			5.0 (5 - 5) n1
<i>Scutellaria racemosa</i>	1.0 (1 - 1) n2					
<i>Sedum sp.</i>			2.1 (1 - 4) n7			
<i>Sequoiadendron giganteum</i>						2.0 (2 - 2) n1
<i>Spiraea sp.</i>	1.7 (1 - 3) n7	3.0 (3 - 3) n1	2.0 (1 - 4) n4			3.3 (3 - 4) n3
<i>Sporobolus heterolepis</i>			1.3 (1 - 2) n3			
<i>Stewartia sp.</i>			1.0 (1 - 1) n1			
<i>Syringa sp.</i>		1.0 (1 - 1) n1	1.0 (1 - 1) n4			2.8 (2 - 4) n4
<i>Taxus sp.</i>	1.0 (1 - 1) n3		1.0 (1 - 1) n3			1.0 (1 - 1) n1
<i>Ternstroemia sp.</i>		2.0 (2 - 2) n1	1.0 (1 - 1) n1			
<i>Teucrium chamaedrys</i>			2.0 (2 - 2) n1			
<i>Thuja sp.</i>	1.0 (1 - 1) n7		1.3 (1 - 2) n4		2.0 (2 - 2) n1	1.0 (1 - 1) n3
<i>Trachelospermum asiaticum</i>		1.0 (1 - 1) n1				1.0 (1 - 1) n1
<i>Tsuga sp.</i>	1.0 (1 - 1) n1					
<i>Vaccinium sp.</i>	1.7 (1 - 3) n3					4.0 (4 - 4) n1
<i>Verbena sp.</i>		1.3 (1 - 2) n3			1.0 (1 - 1) n1	
<i>Veronica sp.</i>	1.0 (1 - 1) n1					
<i>Viburnum dentatum</i>						3.5 (3 - 4) n2
<i>Viburnum opulus var. americanum</i>						1.0 (1 - 1) n1
<i>Viburnum sp.</i>	1.3 (1 - 2) n3		1.0 (1 - 1) n6			3.4 (2 - 4) n7
<i>Vinca sp.</i>	2.0 (1 - 3) n2					2.3 (2 - 3) n3
<i>Weigela sp.</i>	1.0 (1 - 1) n1					
<i>Yucca filamentosa</i>	1.0 (1 - 1) n1					
<i>Zelkova serrata</i>			1.0 (1 - 1) n2			

Average rating on a scale of 1 – 5 with 1 = no to slight transitory injury and 5 = severe injury with mortality; minimum to maximum rating; number of trials. A rating of 3 or higher is considered commercially unacceptable.

Phytotoxicity of BroadStar G Formulations

In general, BroadStar G formulations exhibited no or minimal negative impact on a wide range of plant species or genera (Table 1).

For BroadStar 0.17G, 84 plant species or genera were screened. Twenty-one exhibited no injury or impact to plant growth or transient injury with plants salable at the end of the experiments (Table 2). Some minimal injury may be acceptable for growers if applications are made several weeks to months in advance of crop sale particularly for woody ornamental crops. For two crops, there was no or little injury exhibited at the 1X or 2X rates, but significant phytotoxicity occurred at 4X (Table 3). Only two crops exhibited sufficient damage at all tested rates to not recommend BroadStar 0.17G over the top applications (Table 4). Two crops exhibited variable responses which might warrant additional testing (Table 5). Fifty-seven crops were screened in less than 3 trials (Table 6).

For the original BroadStar 0.25G formulation, 49 plant species or genera were screened. Five exhibited no injury or impact to plant growth or transient injury with plants salable at the end of the experiments (Table 7). One crop exhibited variable responses which might warrant additional testing (Table 8). Forty-three crops were screened in less than 3 trials (Table 11).

For the newer BroadStar 0.25G, 75 plant species or genera were screened. Forty-one exhibited no injury or impact to plant growth or transient injury with plants salable at the end of the experiments (Table 12). For one crop, there was no or little injury exhibited at the 1X or 2X rates, but significant phytotoxicity occurred at 4X (Table 13). No crop exhibited sufficient damage at all tested rates to not recommend over the top applications. Three crops exhibited variable responses which might warrant additional testing (Table 15). Thirty-one crops were screened in less than 3 trials (Table 16). Two species (*Abies*, *Quercus*) also had applications directed to soil-less media instead of over the top broadcast applications. No injury was observed.

Please see Table 2 through Table 16 for summary of results for Broadstar 0.17G, Broadstar 0.25G and Broadstar 0.25G VC1604, and Table 22 for a list of research on all BroadStar G formulations and a summary of the individual trial results.

Table 2. List of BroadStar 0.17G treated crops with no or minimal transitory injury.

<i>Abelia sp.</i>	<i>Juniperus horizontalis</i>
<i>Berberis sp.</i>	<i>Juniperus squamata</i>
<i>Buddleia davidii</i>	<i>Pieris sp.</i>
<i>Buxus microphylla</i>	<i>Potentilla sp.</i>
<i>Cotoneaster sp.</i>	<i>Rhododendron sp.</i>
<i>Gypsophila elegans</i>	<i>Spiraea sp.</i>
<i>Hedera helix</i>	<i>Taxus sp.</i>
<i>Ilex crenata</i>	<i>Thuja sp.</i>
<i>Ilex x meserveae</i>	<i>Vaccinium sp.</i>
<i>Ilex sp.</i>	<i>Viburnum sp.</i>
<i>Juniperus conferta</i>	

Table 3. List of BroadStar 0.17G treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

Hemerocallis sp.
Liriope muscari 'Variegata'

Table 4. List of BroadStar 0.17G treated crops exhibiting significant injury.

Achillea millefolium
Hosta sp. (*fortunei, nigrescens, plantaginea*)

Table 5. List of BroadStar 0.17G treated crops where more information is needed.

*Hydrangea sp*²
Ilex sp.

Table 6. List of BroadStar 0.17G treated crops with less than 3 trials.

<i>Abies sp.</i> ¹	<i>Liriope spicata</i> ¹
<i>Acer ginnala</i> ¹	<i>Lonicera sp.</i>
<i>Acer palmatum</i> ¹	<i>Mahonia aquifolium</i> ¹
<i>Artemisia lactiflora</i> ¹	<i>Myrica pensylvanica</i> ^{1,2}
<i>Buxus sp.</i> ¹	<i>Nandina domestica</i> ^{1,2}
<i>Calluna sp.</i> ¹	<i>Ophiopogon sp.</i> ¹
<i>Carex sp.</i> ¹	<i>Origanum libanoticum</i> ¹
<i>Cerastium tomentosum</i>	<i>Osteospermum sp.</i> ¹
<i>Clethra alnifolia</i> ^{1,2}	<i>Pachysandra terminalis</i> ¹
<i>Cleyera japonica</i>	<i>Pennisetum setaceum</i> ¹
<i>Cornus florida</i> ¹	<i>Phalaris arundinacea</i>
<i>Cornus sericea</i> ¹	<i>Picea sp.</i> ¹
<i>Cupressus sp.</i> ¹	<i>Pinus mugo</i> ¹
<i>Cytisus sp.</i> ¹	<i>Pinus sp.</i> ¹
<i>Daphne sp.</i> ¹	<i>Pittosporum tobira</i> ¹
<i>Delosperma nubigenum</i> ¹	<i>Prunus dulcis</i> ¹
<i>Elaeagnus angustifolia</i> ¹	<i>Prunus sp.</i> ¹
<i>Erica sp.</i> ¹	<i>Pseudotsuga menziesii</i> ¹
<i>Euonymus alatus</i> ¹	<i>Quercus rubra</i> ¹
<i>Festuca glauca</i> ¹	<i>Rhus sp.</i> ¹
<i>Forsythia sp.</i> ¹	<i>Salvia daghestanica</i> ¹
<i>Fraxinus sp.</i> ¹	<i>Salvia x sylvestris</i> ¹
<i>Gazania sp.</i> ¹	<i>Scutellaria racemosa</i> ¹
<i>Gelsemium sp.</i> ¹	<i>Tsuga sp.</i> ¹
<i>Gleditsia sp.</i> ¹	<i>Veronica sp.</i> ¹
<i>Hakonechloa sp.</i> ¹	<i>Vinca sp.</i>
<i>Iberis sp.</i> ¹	<i>Weigela sp.</i> ¹
<i>Jasminum sp.</i>	<i>Yucca filamentosa</i> ¹
<i>Lagerstroemia indica</i> ¹	

¹ For these plants, the one or two trials presented here indicate no phytotoxicity or slight, transient injury, but these findings need to be confirmed.

² Labelled as sensitive on current BroadStar 0.25G label.

Table 7. List of BroadStar 0.25G treated crops with no or minimal transitory injury.

<i>Acer rubrum</i>
<i>Clethra alnifolia</i>
<i>Cortaderia sp.</i>
<i>Rhododendron sp.</i>
<i>Verbena sp.</i>

Table 8. List of BroadStar 0.25G treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

None

Table 9. List of BroadStar 0.25G treated crops exhibiting significant injury.

None

Table 10. List of BroadStar 0.25G treated crops where more information is needed.

*Hydrangea sp.*²

Table 11. List of BroadStar 0.25G treated crops with less than 3 trials.

<i>Acer palmatum</i> ¹	<i>Liriope spicata</i>
<i>Artemisia lactiflora</i> ¹	<i>Loropetalum sp.</i> ¹
<i>Athyrium goeringianum</i>	<i>Myrica cerifera</i> ¹
<i>Berberis sp.</i> ¹	<i>Myrica pensylvanica</i> ¹
<i>Camellia sp.</i> ¹	<i>Nandina domestica</i> ²
<i>Carex sp.</i> ¹	<i>Ophiopogon sp.</i> ¹
<i>Cedrus deodara</i> ¹	<i>Phalaris arundinacea</i>
<i>Chamaecyparis obtusa</i> ¹	<i>Phlox sp.</i>
<i>Chrysanthemum/Dendranthema sp.</i> ¹	<i>Picea sp.</i> ¹
<i>Cuphea hyssopifolia</i>	<i>Pieris sp.</i>
<i>Deschampsia sp.</i> ¹	<i>Pinus mugo</i> ¹
<i>Deutzia sp.</i> ²	<i>Pinus nigra</i> ¹
<i>Festuca glauca</i> ¹	<i>Podocarpus macrophyllus</i> ¹
<i>Fraxinus sp.</i> ¹	<i>Rosa sp.</i> ¹
<i>Gardenia sp.</i> ¹	<i>Rosmarinus officinalis</i> ¹
<i>Helleborus niger</i> ¹	<i>Ruellia caroliniensis</i>
<i>Ilex sp.</i> ¹	<i>Salvia x sylvestris</i> ¹
<i>Juniperus sp.</i> ¹	<i>Spiraea sp.</i>
<i>Lagerstroemia indica</i> ¹	<i>Syringa sp.</i> ¹
<i>Lantana sp.</i> ¹	<i>Ternstroemia sp.</i> ¹
<i>Ligustrum sp.</i> ¹	<i>Trachelospermum asiaticum</i> ¹
<i>Liriope muscari</i>	

¹ For these plants, the one or two trials presented here indicate no phytotoxicity or slight, transient injury, but these findings need to be confirmed.

² Labelled as sensitive on current BroadStar 0.25G label.

Table 12. List of BroadStar 0.25G VC1604 treated crops with no or minimal transitory injury.

<i>Abelia sp.</i>	<i>Lavandula sp.</i>
<i>Abies sp.</i>	<i>Loropetalum sp.</i>
<i>Acer palmatum</i>	<i>Magnolia sp.</i>
<i>Acer rubrum</i>	<i>Nandina domestica</i> ²
<i>Acer sp.</i>	<i>Nepeta cataria</i>
<i>Agapanthus sp.</i>	<i>Nepeta x faassenii</i>
<i>Andropogon gerardii</i>	<i>Picea sp.</i>
<i>Berberis sp.</i>	<i>Pinus sp.</i>
<i>Buddleia davidii</i>	<i>Potentilla sp.</i>
<i>Calamagrostis acutiflora</i>	<i>Rhaphiolepis indica</i>
<i>Camellia sp.</i>	<i>Rhododendron sp.</i>
<i>Ceanothus maritimus</i>	<i>Rosa sp.</i>
<i>Clematis sp.</i>	<i>Salvia x sylvestris</i>
<i>Cornus florida</i>	<i>Sedum sp.</i>
<i>Crataegus sp.</i>	<i>Spiraea sp.</i>
<i>Cryptomeria japonica</i>	<i>Sporobolus heterolepis</i>
<i>Eragrostis curvula</i>	<i>Syringa sp. (See Trader)</i>
<i>Gleditsia sp.</i>	<i>Taxus sp.</i>
<i>Ilex sp.</i>	<i>Thuja sp.</i>
<i>Juniperus sp.</i>	<i>Viburnum sp.</i>
<i>Lagerstroemia indica</i>	

Table 13. List of BroadStar 0.25G VC1604 treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

Muhlenbergia capillaris

Table 14. List of BroadStar 0.25G VC1604 treated crops exhibiting significant injury.

None

Table 15. List of BroadStar 0.25G VC1604 treated crops where more information is needed.

*Hydrangea sp.*²
Juncus effusus
Sedum sp.

Table 16. List of BroadStar 0.25G VC1604 treated crops with less than 3 trials.

<i>Andropogon virginicus</i> ¹	<i>Malus sp.</i> ¹
<i>Buxus sp.</i> ¹	<i>Muhlenbergia dubia</i> ¹
<i>Carex divulsa</i> ¹	<i>Ophiopogon sp.</i> ¹
<i>Caryopteris x clandonensis</i> ¹	<i>Osmanthus heterophyllus</i> ¹
<i>Ceanothus sp.</i> ¹	<i>Paeonia sp.</i> ¹
<i>Ceanothus x pallida</i> ¹	<i>Philadelphus sp.</i>
<i>Clethra alnifolia</i> ¹	<i>Photinia sp.</i> ¹
<i>Cotoneaster sp.</i> ¹	<i>Pieris sp.</i> ¹
<i>Epilobium canum</i> ¹	<i>Quercus sp.</i> ¹
<i>Euonymus alatus</i> ¹	<i>Ribes viburnifolium</i> ¹
<i>Forsythia sp.</i> ¹	<i>Sabal minor</i> ¹
<i>Hakonechloa sp.</i> ¹	<i>Stewartia sp.</i> ¹
<i>Heteromeles arbutifolia</i> ¹	<i>Ternstroemia sp.</i> ¹
<i>Hylotelephium sieboldii</i>	<i>Teucrium chamaedrys</i> ¹
<i>Leucothoe sp.</i> ¹	<i>Zelkova serrata</i> ¹
<i>Ligustrum sp.</i>	

¹ For these plants, the one or two trials presented here indicate no phytotoxicity or slight, transient injury, but these findings need to be confirmed.

² Labelled as sensitive on current BroadStar 0.25G label.

Phytotoxicity of SureGuard 51WDG

For SureGuard, 66 plant species or genera were screened with over the top applications. Six exhibited no injury or impact to plant growth or transient injury with plants salable at the end of the experiments (Table 17). Some minimal injury may be acceptable for growers if applications are made several weeks to months in advance of crop sale particularly for woody ornamental crops. For one crop, there was no or little injury exhibited at the 1X or 2X rates, but significant phytotoxicity occurred at 4X (Table 18). Seven crops exhibited sufficient damage at all tested rates to not recommend over the top applications (Table 19). Three crops exhibited variable responses which might warrant additional testing (Table 20). Forty-nine crops were screened in less than 3 trials (Table 21).

In addition, SureGuard was applied to 16 crops as directed sprays. While none of the crops had three or more trials, most had no to minor injury but *Duetzia* and *Phalaris arundinacea* exhibited severe injury.

Please see Table 23 for a list of research and a summary of the individual trial results with over the top applications of SureGuard 51WDG.

Table 17. List of SureGuard 51WDG treated crops with no or minimal transitory injury with applications over dormant or actively growing plants.

Abies balsamea
Abies fraseri
Juniperus horizontalis

Juniperus squamata
Quercus rubra
Thuja sp.

Table 18. List of SureGuard 51WDG treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

Vinca sp.

Table 19. List of SureGuard 51WDG treated crops exhibiting significant injury.

Berberis thunbergii
Hydrangea sp.
Ilex x meserveae
Rhododendron sp.

Rosa sp.
Spiraea sp.
Viburnum sp.

Table 20. List of SureGuard 51WDG treated crops where more information is needed.

Hemerocallis sp.
Rudbeckia fulgida var. speciosa
Syringa sp.

Table 21. List of SureGuard 51WDG treated crops with less than 3 trials.

<i>Abies grandis</i> ¹	<i>Ilex vomitoria</i>
<i>Abies lasiocarpa</i> ¹	<i>Juniperus sp.</i> ¹
<i>Abies sp.</i>	<i>Lagerstroemia indica</i>
<i>Acer rubrum</i> ¹	<i>Lilium longiflorum</i> ¹
<i>Achillea millefolium</i> ¹	<i>Liriope muscari</i>
<i>Buxus microphylla</i>	<i>Liriope spicata</i>
<i>Buxus sp.</i>	<i>Nandina domestica</i>
<i>Cedrus deodara</i> ¹	<i>Osmunda regalis</i>
<i>Chamaecyparis obtusa</i> ¹	<i>Pennisetum setaceum</i>
<i>Clethra alnifolia</i> ¹	<i>Picea sp.</i>
<i>Cleyera japonica</i>	<i>Pieris sp.</i>
<i>Cortaderia sp.</i>	<i>Pinus mugo</i> ¹
<i>Cotoneaster sp.</i>	<i>Pinus nigra</i> ¹
<i>Euonymus alatus</i>	<i>Pinus sp.</i> ¹
<i>Festuca glauca</i> ¹	<i>Pinus thunbergiana</i> ¹
<i>Forsythia sp.</i>	<i>Potentilla sp.</i>
<i>Fraxinus sp.</i> ¹	<i>Quercus sp.</i> ¹
<i>Hedera helix</i> ¹	<i>Salvia x sylvestris</i>
<i>Helleborus niger</i>	<i>Sequoiadendron giganteum</i> ¹
<i>Hibiscus sp.</i>	<i>Taxus sp.</i> ¹
<i>Hosta sp.</i>	<i>Trachelospermum asiaticum</i> ¹
<i>Hydrangea macrophylla</i>	<i>Vaccinium sp.</i>
<i>Iberis sp.</i>	<i>Viburnum dentatum</i>
<i>Ilex crenata</i>	<i>Viburnum opulus var. americanum</i> ¹
<i>Ilex sp.</i>	

¹ For these plants, the one or two trials presented here indicate no phytotoxicity or slight, transient injury, but these findings need to be confirmed.

Table 22. Detailed Summary of Crop Safety Testing with Broadstar 0.17G, Broadstar 0.25G, and Broadstar 0.25G VC1604 (flumioxazin)

Note: Table entries are sorted by crop Latin name. Only those trials with research reports received by 2/19/2024 are listed below.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
19951	BroadStar 0.17G	Abelia (Abelia sp.) A. x grandiflora 'Sherwoodii'	Field Container	Altland	OR	2002	Broadcast	Slight transient injury at all rates (0.25, 0.5, and 1.0 lb ai per acre).
19951	BroadStar 0.17G	Abelia (Abelia sp.) A. grandiflora	Field Container	Gilliam	AL	2002	Broadcast	No significant injury at 0.25, 0.5 or 1.0 lb ai per acre; excellent weed control.
19951	BroadStar 0.17G	Abelia (Abelia sp.) A. x grandiflora 'John Creech'	Field Container	Neal	NC	2001	Broadcast	No injury after single application of 0.25, 0.5 and 1.0 lb ai per acre, but the highest rate did exhibit slight injury after the second application.
19869	BroadStar 0.17G	Fir (Abies sp.) A. koreana	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19954	BroadStar 0.17G	Maple, Amur (Acer ginnala)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20012	BroadStar 0.17G	Maple, Japanese (Acer palmatum)	Field In-Ground	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
19952	BroadStar 0.17G	Yarrow, Common (Achillea millefolium) 'Red Beauty'	Field Container	Klett	CO	2003	Broadcast	Fort Collins: Moderate injury to mortality occurred increasing with rate (0.25, 0.5, 1.0 lb ai per acre).
19952	BroadStar 0.17G	Yarrow, Common (Achillea millefolium) 'Moonshine'	Field Container	Neal	NC	2001	Broadcast	Injury observed at 0.17, 0.34, and 0.68 with some recovery seen at the two lower rates.
22935	BroadStar 0.17G	Mugwort, White (Artemisia lactiflora) 'Guizho'	Field Container	Klett	CO	2002	Broadcast	No visual phytotoxicity at 0.25 and 0.5 lb ai per acre; good weed control.
22935	BroadStar 0.17G	Mugwort, White (Artemisia lactiflora) 'Guizho'	Field Container	Klett	CO	2002	Broadcast	No visual phytotoxicity at 0.25 and 0.5 lb ai per acre; good weed control.
19963	BroadStar 0.17G	Barberry (Berberis sp.) B. thunbergii 'Rosie Glow'	Field Container	Altland	OR	2002	Broadcast	Significant injury increasing with rate when applied at bud break, but no injury occurred with applications to mature foliage (0.25, 0.5 and 1.0 lb ai per acre).
19963	BroadStar 0.17G	Barberry (Berberis sp.) B. thunbergii 'Rosy Glow'	Field Container	Derr	VA	2002	Broadcast	No visible injury or growth suppression at 0.25, 0.5 or 1.0 lb ai per acre; good to excellent spurge control and large crabgrass control increased with rate.
19963	BroadStar 0.17G	Barberry (Berberis sp.) B. thunbergii var. atropurpurea (Rose Glow)	Field Container	Gilliam	AL	2002	Broadcast	No phytotoxicity observed at 0.25, 0.5 or 1.0 lb ai per acre; good to excellent weed control.
19963	BroadStar 0.17G	Barberry (Berberis sp.) B. thunbergii 'William Penn'	Field Container	Hart	NJ	2000	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19963	BroadStar 0.17G	Barberry (Berberis sp.) B. gladwynensii	Field Container	Hart	NJ	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
19963	BroadStar 0.17G	Barberry (<i>Berberis</i> sp.) <i>B. thunbergii</i> 'Atropurpurea'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19874	BroadStar 0.17G	Butterfly Bush (<i>Buddleia davidii</i>) 'Lochinch'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19888	BroadStar 0.17G	Butterfly Bush (<i>Buddleia davidii</i>) 'Lochinch'	Field In-Ground	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19874	BroadStar 0.17G	Butterfly Bush (<i>Buddleia davidii</i>)	Field Container	Gilliam	AL	2002	Broadcast	Minor but transient injury at 0.5 and 1.0 lb ai per acre; excellent weed control.
19874	BroadStar 0.17G	Butterfly Bush (<i>Buddleia davidii</i>)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19874	BroadStar 0.17G	Butterfly Bush (<i>Buddleia davidii</i>) 'Black Knight'	Field Container	Neal	NC	2002	Broadcast	Very slight to moderate injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre) with no injury from newly emerged leaves.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) 'Green Velvet'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) <i>B. microphylla</i> var. <i>japonica</i>	Field Container	Derr	VA	2002	Broadcast	No visible injury or growth suppression at 0.25, 0.5 or 1.0 lb ai per acre; good to excellent control of spurge, large crabgrass control increased with rate.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) <i>B. microphylla</i>	Field Container	Gilliam	AL	2002	Broadcast	Minor but transient injury with 0.5 and 1.0 lb ai per acre; some control of spurge, but impact was lost by 90 DAT.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) 'Winter Gem'	Field Container	Klett	CO	2003	Broadcast	Fort Collins: No injury or growth suppression at 0.25, 0.5 or 1.0 lb ai per acre.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) <i>B. microphylla</i>	Field Container	Neal	NC	2001	Broadcast	No injury at 0.25, 0.34, 0.5 and 1.0 lb ai per acre.
19964	BroadStar 0.17G	Boxwood, Littleleaf (<i>Buxus microphylla</i>) <i>B. microphylla</i>	Field Container	Neal	NC	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
20021	BroadStar 0.17G	Boxwood (<i>Buxus</i> sp.) 'Velvet Green'	Field In-Ground	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
20021	BroadStar 0.17G	Boxwood (<i>Buxus</i> sp.) <i>B. microphylla koreana</i>	Field In-Ground	Beste (ARS)	MD	2000	Broadcast	No injury with 0.17, 0.34 or 0.68 lb ai per acre; only 0.68 lb ai per acre provided excellent control of chickweed.
19966	BroadStar 0.17G	Heather (<i>Calluna</i> sp.) <i>C. vulgaris</i> 'H.E.Beale'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19762	BroadStar 0.17G	Sedge (<i>Carex</i> sp.) <i>C. buchananii</i>	Field Container	Klett	CO	2003	Broadcast	Grand Junction: No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19971	BroadStar 0.17G	Snow-In-Summer (<i>Cerastium tomentosum</i>)	Field Container	Klett	CO	2003	Broadcast	Fort Collins: No injury at 0.25 lb ai per acre, but moderate injury to mortality with 0.5 and 1.0 lb ai per acre.
19972	BroadStar 0.17G	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>)	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
19973	BroadStar 0.17G	Sakaki, Cleyera (Cleyera japonica)	Field Container	Gilliam	AL	2001	Broadcast	Slight injury but commercially acceptable at all rates (0.17, 0.34, and 0.68 lb ai per acre); excellent weed control.
19973	BroadStar 0.17G	Sakaki, Cleyera (Cleyera japonica)	Field Container	Gilliam	AL	2002	Broadcast	Slight to moderate injury increasing with rate (0.25, 0.5 and 1.0 lb ai per acre) with only the highest rate demonstrating slight injury at 90 DAT, but after second application all treatments resulted in marked but transient injury; good weed control.
19866	BroadStar 0.17G	Dogwood, Flowering (Cornus florida)	Field Container	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
19974	BroadStar 0.17G	Dogwood, Red Osier (Cornus sericea)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19976	BroadStar 0.17G	Cotoneaster (Cotoneaster sp.) 'Striebs Findling'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19976	BroadStar 0.17G	Cotoneaster (Cotoneaster sp.) C. lucidus	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19976	BroadStar 0.17G	Cotoneaster (Cotoneaster sp.) C. dammeri 'Coral Beauty'	Field Container	Neal	NC	2002	Broadcast	No injury at 0.25 lb ai per acre, but slight to moderate injury was observed with 0.5 and 1.0 lb ai per acre with plants recovering by the end of the study.
19908	BroadStar 0.17G	Cypress (Cupressus sp.)	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19978	BroadStar 0.17G	Broom (Cytisus sp.) C. purgans	Field Container	Klett	CO	2003	Broadcast	Grand Junction: No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19980	BroadStar 0.17G	Daphne (Daphne sp.) D. odora 'Aureo-marginata'	Field Container	Neal	NC	2001	Broadcast	The only injury observed was where granules adhered to the foliage with no injury apparent after 4 weeks (0.25 and 0.5 lb ai per acre).
19765	BroadStar 0.17G	Hardy Ice Plant, Yellow Ice Plant (Delosperma nubigenum) D. alba	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20007	BroadStar 0.17G	Russian Olive (Elaeagnus angustifolia)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19982	BroadStar 0.17G	Heath (Erica sp.) E. cinerea 'Purple Beauty'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20156	BroadStar 0.17G	Burning Bush (Euonymus alatus)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19773	BroadStar 0.17G	Field Fescue (Festuca glauca) 'Elijah Blue'	Field Container	Klett	CO	2003	Broadcast	Grand Junction: No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19773	BroadStar 0.17G	Field Fescue (Festuca glauca)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19984	BroadStar 0.17G	Forsythia (Forsythia sp.) F. x intermedia	Field Container	Gilliam	AL	2002	Broadcast	No injury at 0.25, 0.5 or 1.0 lb ai per acre; some control of weeds in this trial as measured by percent cover.

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19984	BroadStar 0.17G	Forsythia (<i>Forsythia</i> sp.) <i>F. suspensa</i>	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19871	BroadStar 0.17G	Ash (<i>Fraxinus</i> sp.) <i>F. americana</i>	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19775	BroadStar 0.17G	Gazania (<i>Gazania</i> sp.) 'Sunshine Improved Mix'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19987	BroadStar 0.17G	Trumpetflower (<i>Gelsemium</i> sp.) <i>G. sempervirens</i>	Field Container	Gilliam	AL	2002	Broadcast	Injury (brown spots on upper leaf surfaces) only observed at 1.0 lb ai per acre; good to great control of oxalis.
19872	BroadStar 0.17G	Locust (<i>Gleditsia</i> sp.) <i>G. tricanthos</i>	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19776	BroadStar 0.17G	Baby's Breath (<i>Gypsophila elegans</i>)	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19835	BroadStar 0.17G	Baby's Breath (<i>Gypsophila elegans</i>)	Field In-Ground	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19776	BroadStar 0.17G	Baby's Breath (<i>Gypsophila elegans</i>) 'Gypsy'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19777	BroadStar 0.17G	Hakone Grass (<i>Hakonechloa</i> sp.) 'Aureola'	Field Container	Klett	CO	2003	Broadcast	No injury at 0.25 or 0.5 lb ai per acre, but 1.0 lb ai per acre reduced growth.
19779	BroadStar 0.17G	Ivy, English (<i>Hedera helix</i>)	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19779	BroadStar 0.17G	Ivy, English (<i>Hedera helix</i>)	Field Container	Derr	VA	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19779	BroadStar 0.17G	Ivy, English (<i>Hedera helix</i>)	Field Container	Gilliam	AL	2002	Broadcast	No significant injury at 0.25, 0.5, and 1.0 lb ai per acre; weed control increased with rate.
19779	BroadStar 0.17G	Ivy, English (<i>Hedera helix</i>) <i>H. colchica dentata</i>	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.) 'Stella d'Oro'	Field Container	Beste (ARS)	MD	2000	Broadcast	Slight, transient chlorosis at 0.17, 0.34, and 0.68 lb ai per acre.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.) 'Stella d'Oro'	Field Container	Derr	VA	2001	Broadcast	Slight transient injury at 0.17, 0.34, and 0.68 lb ai per acre; great pre-emergent control of yellow woodsorrel.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.)	Field Container	Fraelich	GA	2002	Broadcast	No phyto at 0.25 lb ai per acre, and very slight phyto at 0.5 and 1.0 lb ai per acre.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.)	Field Container	Gilliam	AL	2001	Broadcast	Slight to moderate injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre), but by 90 DAT the injury was not significantly different than untreated; excellent control of spurge.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.) 'Red Cadet'	Field Container	Hart	NJ	2000	Broadcast	Severe leaf burning and growth reductions after single application of 0.17, 0.34, and 0.68 lb ai per acre.
19780	BroadStar 0.17G	Daylily (<i>Hemerocallis</i> sp.) 'Janice Brown'	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.

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19780	BroadStar 0.17G	Daylily (Hemerocallis sp.) 'Ming Toy'	Field Container	Knight	MS	2002	Broadcast	Moderate injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre) with some minimal recovery.
19780	BroadStar 0.17G	Daylily (Hemerocallis sp.) 'Campfire Embers'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19781	BroadStar 0.17G	Plantain Lily (Hosta sp.) H. fortunei 'Francee'	Field Container	Derr	VA	2001	Broadcast	Moderate to significant injury increasing with rate (0.17, 0.34, and 0.58 lb ai per acre); good to excellent control of spotted prostrate spurge.
19781	BroadStar 0.17G	Plantain Lily (Hosta sp.) H. nigrescens 'Eliator'	Field Container	Gilliam	AL	2002	Broadcast	Significant injury occurred with all rates (0.25, 0.5 and 1 lb ai per acre), with only the 0.25 lb ai per acre recovering by 90 DAT; good weed control.
19781	BroadStar 0.17G	Plantain Lily (Hosta sp.) H. plantaginea 'Albo Marginata'	Field Container	Hart	NJ	2001	Broadcast	Significant leaf burning and growth reductions occurred at 0.17, 0.34, and 0.68 lb ai per acre.
20155	BroadStar 0.17G	Hydrangea (Hydrangea sp.) H. macrophylla 'Nikko Blue'	Field Container	Fraelich	GA	2002	Broadcast	No injury at 0.25 and 0.5 lb ai per acre, slight at 1.0 lb ai per acre.
20155	BroadStar 0.17G	Hydrangea (Hydrangea sp.) 'Sister Teresa'	Field Container	Gilliam	AL	2002	Broadcast	Significant injury even mortality with 0.5 and 1.0 lb ai per acre; good weed control.
20155	BroadStar 0.17G	Hydrangea (Hydrangea sp.) H. arborescens 'Annabelle'	Field Container	Klett	CO	2003	Broadcast	Fort Collins: Moderate chlorosis to necrosis increasing in severity with rate (0.25, 0.5, 1.0 lb ai per acre).
19783	BroadStar 0.17G	Candytuft (Iberis sp.) I. pygmae	Field Container	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
19783	BroadStar 0.17G	Candytuft (Iberis sp.) 'Iceber Superior'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
36001	BroadStar 0.17G	Holly, Japanese (Ilex crenata) I. crenata compacta	Field Container	Derr	VA	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre; excellent spurge control and large crabgrass control increased with rate.
36001	BroadStar 0.17G	Holly, Japanese (Ilex crenata) I. crenata compacta	Field Container	Gilliam	AL	2001	Broadcast	No injury at 0.17, 0.34 and 0.68 lb ai per acre.
36001	BroadStar 0.17G	Holly, Japanese (Ilex crenata) I. crenata compacta	Field Container	Gilliam	AL	2002	Broadcast	No injury with 0.25 and 0.5 lb ai per acre and slight transient with 1.0 lb ai per acre; good weed control.
36001	BroadStar 0.17G	Holly, Japanese (Ilex crenata) 'Honey Bee'	Field Container	Hart	NJ	2000	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20046	BroadStar 0.17G	Holly (Ilex sp.) I. x meserveae 'Blue Girl' 'Blue Boy'	Field In-Ground	Ahrens/ Mervosh	CT	2000	Broadcast	Slight to moderate injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre) with recovery occurring in 6 weeks to an acceptable level at the two lower rates; moderate suppression of mugwort.
20046	BroadStar 0.17G	Holly (Ilex sp.) I. crenata 'Compacta'	Field In-Ground	Beste (ARS)	MD	2000	Broadcast	Slight injury at 0.34 and 0.68 lb ai per acre, but none at 0.17 lb ai per acre; morningglory, annual chickweed, knawl, mare's tail and barnyardgrass were controlled at all rates.

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20046	BroadStar 0.17G	Holly (Ilex sp.) I. crenata 'Green Lustre'	Field In-Ground	Beste (ARS)	MD	2000	Broadcast	Unacceptable injury at 0.17, 0.34, and 0.68 lb ai per acre; no control of yellow nutsedge and limited control of barnyardgrass.
20046	BroadStar 0.17G	Holly (Ilex sp.) I. glabra 'Compacta'	Field In-Ground	Beste (ARS)	MD	2000	Broadcast	Slight but acceptable injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre); excellent control of chickweed, prostrate spurge and marestail, but marginal control of ivyleaf morningglory, yellow nutsedge, Eclipta, smooth crabgrass, grasses and Poa
19989	BroadStar 0.17G	Holly (Ilex sp.) 'Berry Heavy/Southern Giant'	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19989	BroadStar 0.17G	Holly (Ilex sp.) I. cornuta 'Dwarf Buford'	Field Container	Neal	NC	2002	Broadcast	No injury with 0.25, 0.5, and 1.0 lb ai per acre.
36002	BroadStar 0.17G	Holly, Blue (Ilex x meserveae) I. x meserveae 'Blue Prince'	Field Container	Altland	OR	2002	Broadcast	No injury with single application prior to bud break, but slight injury (foliar spotting) increasing with rate (0.25, 0.5 and 1.0 lb ai per acre) after second application onto new foliage.
36002	BroadStar 0.17G	Holly, Blue (Ilex x meserveae) I. x meserveae 'Blue Prince' & 'Blue Princess'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 and 0.68 lb ai per acre.
36002	BroadStar 0.17G	Holly, Blue (Ilex x meserveae) I. x meserveae 'Blue Girl'	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19784	BroadStar 0.17G	Jasmine (Jasminum sp.) J. nudiflorum	Field Container	Knight	MS	2002	Broadcast	Significant damage at all rates (0.25, 0.5, 1.0 lb ai per acre).
36003	BroadStar 0.17G	Juniper, Shore (Juniperus conferta) 'Blue Pacific'	Field Container	Beste (ARS)	MD	2000	Broadcast	No injury at 0.17, 0.34, or 0.68 lb ai per acre.
36003	BroadStar 0.17G	Juniper, Shore (Juniperus conferta) 'Blue Pacific'	Field Container	Gilliam	AL	2002	Broadcast	No injury at 0.25, 0.5 or 1.0 lb ai per acre; good weed control.
36003	BroadStar 0.17G	Juniper, Shore (Juniperus conferta) 'Blue Pacific'	Field Container	Neal	NC	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
36004	BroadStar 0.17G	Juniper, Creeping or Trailing (Juniperus horizontalis) 'Bar Harbor'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	No injury at 0.17, 0.34, or 0.68 lb ai per acre.
36004	BroadStar 0.17G	Juniper, Creeping or Trailing (Juniperus horizontalis) 'Bar Harbor'	Field Container	Ahrens/ Mervosh	CT	2001	Broadcast	No injury at 0.17, 0.34, or 0.68 lb ai per acre with second year applications on same plants.
36004	BroadStar 0.17G	Juniper, Creeping or Trailing (Juniperus horizontalis) 'Wiltonii'	Field Container	Neal	NC	2001	Broadcast	No injury at 0.25, 0.34, 0.5 and 1.0 lb ai per acre.
19864	BroadStar 0.17G	Juniper (Juniperus sp.) J. communis 'Effusa'	Field Container	Altland	OR	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
19864	BroadStar 0.17G	Juniper (Juniperus sp.) J. rigida	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
36005	BroadStar 0.17G	Juniper, Flaky (Juniperus squamata) 'Blue Star'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	No injury with 0.17, 0.34 or 0.68 lb ai per acre.

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36005	BroadStar 0.17G	Juniper, Flaky (Juniperus squamata) Blue Star'	Field Container	Ahrens/Mervosh	CT	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre with second year applications on same plants; excellent weed control.
36005	BroadStar 0.17G	Juniper, Flaky (Juniperus squamata) J. squamata parsoni	Field Container	Fraelich	GA	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19893	BroadStar 0.17G	Crape Myrtle (Lagerstroemia indica) 'Tuscarora'	Field Container	Gilliam	AL	2001	Broadcast	Slight injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre), but not apparent at 90DAT; excellent weed control.
19893	BroadStar 0.17G	Crape Myrtle (Lagerstroemia indica) 'Tuscarora'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari) 'Variegata'	Field Container	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5, and 1.0 lb ai per acre.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari)	Field Container	Beste (ARS)	MD	2000	Broadcast	No injury observed with 0.17, 0.34, or 0.68 lb ai per acre.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari) 'Variegata'	Field Container	Derr	VA	2001	Broadcast	Slight injury at all rates (0.17, 0.34, 0.68 lb ai per acre), but no impact on fresh weight or number of flower spikes.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari)	Field Container	Fraelich	GA	2002	Broadcast	No injury at 0.25 and 0.5 lb ai per acre, slight at 1.0 lb ai per acre.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari)	Field Container	Gilliam	AL	2002	Broadcast	No injury observed with 0.25, 0.5 and 1.0 lb ai per acre; good weed control.
19788	BroadStar 0.17G	Lilyturf, Big Blue (Liriope muscari) Variegata'	Field Container	Neal	NC	2002	Broadcast	Moderate injury as exhibited by necrotic spots increasing with rate (0.25, 0.5, 1.0 lb ai per acre); foliage emerging after treatment was not visibly affected, but plants treated with 1.0 lb ai per acre were stunted.
19891	BroadStar 0.17G	Liriope, Creeping (Liriope spicata)	Field Container	Gilliam	AL	2001	Broadcast	Minor, but transient, with 0.17, 0.34, 0.68 lb ai per acre.
19990	BroadStar 0.17G	Honeysuckle (Lonicera sp.) L. japonica	Field Container	Gilliam	AL	2002	Broadcast	No phytotoxicity was observed at 0.25, 0.5 and 1.0 lb ai per acre; good weed control.
19990	BroadStar 0.17G	Honeysuckle (Lonicera sp.) L. tartarica 'Arnold Red'	Field Container	Klett	CO	2003	Broadcast	Grand Junction: All rates (0.25, 0.5, 1.0 lb ai per acre) caused veinal chlorosis and leaf cupping.
19790	BroadStar 0.17G	Barberry, Hollyleaved (Mahonia aquifolium)	Field Container	Klett	CO	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
23662	BroadStar 0.17G	Bayberry, Northern (Myrica pensylvanica)	Field Container	Hart	NJ	2001	Broadcast	No injury at 0.17, 0.34 and 0.68 lb ai per acre.
19993	BroadStar 0.17G	Sacred Bamboo (Nandina domestica) 'Firepower'	Field Container	Neal	NC	2001	Broadcast	No injury after single application, however after the second application slight to moderate injury occurred at all rates (0.25, 0.34, 0.5, and 1.0 lb ai per acre).
19792	BroadStar 0.17G	Mondo Grass; Lilyturf; Ker-Gawl (Ophiopogon sp.) O. japonicus	Field Container	Gilliam	AL	2002	Broadcast	None to minor injury increasing with rate (0.25, 0.5 and 1.0 lb ai per acre) with the 0.5 rate exhibiting transient phytotoxicity; good to excellent weed control.

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24960	BroadStar 0.17G	Hopflower Oregano; Majoram (<i>Origanum libanoticum</i>)	Field Container	Klett	CO	2002	Broadcast	No injury at 0.25 and 0.5 lb ai per acre; excellent weed control.
24960	BroadStar 0.17G	Hopflower Oregano; Majoram (<i>Origanum libanoticum</i>)	Field Container	Klett	CO	2002	Broadcast	No injury at 0.25 and 0.5 lb ai per acre; good to excellent weed control.
19793	BroadStar 0.17G	Daisybush (<i>Osteospermum</i> sp.) 'Gaiety Orange'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19794	BroadStar 0.17G	Japanese Pachysandra (<i>Pachysandra terminalis</i>) 'Green Sheen'	Field Container	Klett	CO	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19795	BroadStar 0.17G	Crimson Fountain Grass (<i>Pennisetum setaceum</i>) 'Hameln'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19854	BroadStar 0.17G	Crimson Fountain Grass (<i>Pennisetum setaceum</i>) 'Hamelin'	Field In-Ground	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19796	BroadStar 0.17G	Reed Canarygrass (<i>Phalaris arundinacea</i>) 'Feeseys' Form'	Field Container	Anderson	OH	2002	Broadcast	Moderate to severe chlorosis and necrosis increasing with rate (0.25, 0.5 and 1.0 lb ai per acre).
19796	BroadStar 0.17G	Reed Canarygrass (<i>Phalaris arundinacea</i>) 'Picta'	Field Container	Klett	CO	2003	Broadcast	No injury at 0.25 and 0.5 lb ai per acre and only slight reduction in plant size with 1.0 lb ai per acre.
19867	BroadStar 0.17G	Spruce (<i>Picea</i> sp.) <i>P. omorika</i>	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19997	BroadStar 0.17G	Andromeda, Fetterbush (<i>Pieris</i> sp.) <i>P. japonica</i> 'Valley Valentine'	Field Container	Altland	OR	2002	Broadcast	Single application prior to bud break caused slight injury at only the highest rate of 1.0 lb ai per acre; no visible injury occurred after the second application at any rate, but 1.0 lb ai per acre did cause stunting.
19997	BroadStar 0.17G	Andromeda, Fetterbush (<i>Pieris</i> sp.) <i>P. japonica</i> 'Flamingo'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19997	BroadStar 0.17G	Andromeda, Fetterbush (<i>Pieris</i> sp.) <i>P. japonica</i> v <i>yakushmanum</i> 'Brouwer's Beauty'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19928	BroadStar 0.17G	Pine, Mugo (<i>Pinus mugo</i>)	Field In-Ground	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19998	BroadStar 0.17G	Pine, Mugo (<i>Pinus mugo</i>)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19868	BroadStar 0.17G	Pine (<i>Pinus</i> sp.) <i>P. bungeana</i>	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19999	BroadStar 0.17G	Japanese Mock Orange (<i>Pittosporum tobira</i>) 'Wheeler's Dwarf'	Field Container	Neal	NC	2002	Broadcast	No significant injury with 0.25 lb ai per acre, but injury to new growth was observed at 0.5 and 1.0 lb ai per acre. Researcher noted that if applications occur when tender new growth is not present it is unlikely for phytotoxicity to be observed.
20003	BroadStar 0.17G	Cinquefoil; <i>Potentilla</i> (<i>Potentilla</i> sp.) <i>P. fruticosa</i> 'Gold Finger'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre; excellent efficacy.

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20003	BroadStar 0.17G	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Gold Finger'	Field Container	Ahrens/ Mervosh	CT	2001	Broadcast	No injury with 0.17 and 0.34 lb ai per acre after the second years applications, but visible injury and reduced vigor was observed with the 0.68 lb ai per acre rate; excellent weed control.
20003	BroadStar 0.17G	Cinquefoil; Potentilla (Potentilla sp.) P. tabernaemontani 'Verna'	Field Container	Anderson	OH	2002	Broadcast	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
20003	BroadStar 0.17G	Cinquefoil; Potentilla (Potentilla sp.) 'Pink Beauty'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20004	BroadStar 0.17G	Sweet Almond (Prunus dulcis) P. d. amara	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19939	BroadStar 0.17G	Prunus, Non-bearing (Prunus sp.) P. x cistena	Field In-Ground	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5 or 1.0 lb ai per acre.
19797	BroadStar 0.17G	Prunus, Non-bearing (Prunus sp.) P. maritima	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19896	BroadStar 0.17G	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5 or 1.0 lb ai per acre.
19896	BroadStar 0.17G	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19943	BroadStar 0.17G	Oak, Red (Quercus rubra)	Field In-Ground	Hitcher	NJ	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19943	BroadStar 0.17G	Oak, Red (Quercus rubra)	Field In-Ground	Hitcher	NJ	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19744	BroadStar 0.17G	Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	Slight injury at 0.17, 0.34, and 0.68 but at a commercially acceptable level.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Delaware Vally White'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	Slight to moderate transient injury with 0.17, 0.34, and 0.68 lb ai per acre.
19744	BroadStar 0.17G	Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field Container	Ahrens/ Mervosh	CT	2001	Broadcast	Slight injury increasing with rate (0.17, 0.34, and 0.68 lb ai per acre), but commercially acceptable at the two lower rates; excellent weed control.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Delaware Valley White'	Field Container	Ahrens/ Mervosh	CT	2001	Broadcast	Moderate transient injury with 0.17 and 0.34 lb ai per acre with the second year's application and injury was commercially unacceptable at 0.68 lb ai per acre; excellent weed control.
19744	BroadStar 0.17G	Rhododendron (Rhododendron sp.) 'Blue Peter'	Field Container	Altland	OR	2002	Broadcast	No injury at 0.25 lb ai per acre, but moderate to severe injury with 0.5 and 1.0 lb ai per acre.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Stewartsonia'	Field Container	Altland	OR	2002	Broadcast	Slight visible injury across all rates with slight stunting increasing with rate (0.25, 0.5 and 1.0 lb ai per acre).
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) R. obtusum 'Tradition'	Field Container	Beste (ARS)	MD	2000	Broadcast	Moderate transient injury with 0.34 and 0.68 lb ai per acre and very slight injury with 0.17 lb ai per acre.

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19804	BroadStar 0.17G	Azalea & Rhododendron (Rhododendron sp.) R. catawbiense	Field In-Ground	Beste (ARS)	MD	2000	Broadcast	Slight to moderate necrotic injury which persisted through the winter; smooth and large crabgrass and ivyleaf morningglory were managed at all rates, but yellow nutsedge and garlic were not controlled.
19804	BroadStar 0.17G	Azalea & Rhododendron (Rhododendron sp.) R. catawbiense	Field In-Ground	Beste (ARS)	MD	2001	Broadcast	Slight, transient injury at all rates (0.17, 0.34, and 0.68 lb ai per acre) applied for a second year; smooth and large crabgrass and ivyleaf morningglory were managed at all rates, but yellow nutsedge and garlic were not controlled.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Formosa'	Field Container	Derr	VA	2002	Broadcast	Little to no visible injury or growth suppression with 0.25, 0.5 and 1.0 lb ai per acre; excellent spurge control and large crabgrass control increased with rate.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Fashion'	Field Container	Fraelich	GA	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) R. eriocarpum 'Gumpo Pink'	Field Container	Gilliam	AL	2001	Broadcast	No injury at 0.17 lb ai per acre with slight transient injury at 0.34 and 0.68 lb ai per acre; excellent weed control.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Renee Mitchell'	Field Container	Gilliam	AL	2002	Broadcast	Minor injury (brown spots on upper leaf surfaces) at 0.25, 0.5 and 1.0 lb ai per acre, but it became unapparent by 90DAT.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.)	Field Container	Hitcher	NJ	2001	Broadcast	No injury at 0.17 lb ai per acre, and slight contact injury with 0.34 and 0.68 lb ai per acre which was not apparent at 30DAT.
19744	BroadStar 0.17G	Rhododendron (Rhododendron sp.) 'Firestorm'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Klondyke'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19745	BroadStar 0.17G	Azalea (Rhododendron sp.) 'Girard Rose'	Field Container	Neal	NC	2001	Broadcast	Slight contact injury increasing with rate (0.25, 0.34, 0.5, 1.0 lb ai per acre), but new growth was not impacted.
19746	BroadStar 0.17G	Sumac (Rhus sp.)	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
22937	BroadStar 0.17G	Sage (Salvia daghestanica)	Field Container	Klett	CO	2002	Broadcast	No visible injury at 0.25 and 0.5 lb ai per acre; excellent pre-emergent weed control.
22937	BroadStar 0.17G	Sage (Salvia daghestanica)	Field Container	Klett	CO	2002	Broadcast	No visible injury at 0.25 and 0.5 lb ai per acre; excellent pre-emergent weed control.
19798	BroadStar 0.17G	Woodland Sage (Salvia x sylvestris)	Field Container	Gilliam	AL	2001	Broadcast	No injury at 0.17 and 0.34 lb ai per acre and moderate, transient injury at 0.68 lb ai per acre; excellent weed control.
22938	BroadStar 0.17G	South American Skullcap (Scutellaria racemosa)	Field Container	Klett	CO	2002	Broadcast	No visible injury at 0.25 and 0.5 lb ai per acre; excellent pre-emergent weed control.

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22938	BroadStar 0.17G	South American Skullcap (Scutellaria racemosa)	Field Container	Klett	CO	2002	Broadcast	No visible injury at 0.25 and 0.5 lb ai per acre; excellent pre-emergent weed control.
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. nipponica 'Snowmound'	Field Container	Ahrens/ Mervosh	CT	2000	Broadcast	Slight commercially acceptable injury after single application, but vigor was significantly reduced after second application increasing with rate (0.17, 0.34, 0.68 lb ai per acre).
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. nipponica 'Snowmound'	Field Container	Ahrens/ Mervosh	CT	2001	Broadcast	Slight visible injury at 0.17, 0.34, and 0.68 lb ai per acre, but vigor was significantly reduced at the 0.68 lb ai per acre rate; excellent weed control.
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. x vanhouttei	Field Container	Altland	OR	2002	Broadcast	Slight to moderate injury increasing with rate and with second application (0.25, 0.5 and 1.0 lb ai per acre).
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. x vanhouttei	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19809	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. x vanhouttei	Field In-Ground	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. cantoniensis 'Lanceolata'	Field Container	Gilliam	AL	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre; good weed control.
19750	BroadStar 0.17G	Bridal-Wreath (Spiraea sp.) S. x japonica 'Little Princess'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19811	BroadStar 0.17G	Yew (Taxus sp.) T. cuspidata	Field In-Ground	Ahrens/ Mervosh	CT	2000	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre; good to great efficacy on large crabgrass and common ragweed.
19752	BroadStar 0.17G	Yew (Taxus sp.) T. x media 'Hicksii'	Field Container	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19811	BroadStar 0.17G	Yew (Taxus sp.) T. x media 'Hicksii'	Field In-Ground	Anderson	OH	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Smaragd'	Field Container	Altland	OR	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Peabody'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19814	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Peabody'	Field In-Ground	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis	Field Container	Hart	NJ	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. plicata atrovirens	Field Container	Hart	NJ	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19755	BroadStar 0.17G	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Emerald'	Field Container	Neal	NC	2001	Broadcast	No injury at 0.25, 0.34, 0.5 and 1.0 lb ai per acre.
19897	BroadStar 0.17G	Hemlock (Tsuga sp.) T. mertensiana	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.

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19801	BroadStar 0.17G	Blueberry (Non-Bearing) (Vaccinium sp.) V. corym 'North Country'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19801	BroadStar 0.17G	Blueberry (Non-Bearing) (Vaccinium sp.) V. ashei 'Climax'	Field Container	Gilliam	AL	2001	Broadcast	Slight to moderate injury increasing with rate (0.17, 0.34, and 0.68 lb ai per acre); excellent weed control.
19801	BroadStar 0.17G	Blueberry (Non-Bearing) (Vaccinium sp.) 'Blue Crop'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
26623	BroadStar 0.17G	Speedwell (Veronica sp.) 'Lilac Karina'	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19756	BroadStar 0.17G	Arrowwood (Viburnum sp.) V. x bodnantense 'Pink Dawn'	Field Container	Altland	OR	2002	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre; excellent oxalis control.
19756	BroadStar 0.17G	Arrowwood (Viburnum sp.) V. dentatum 'Chicago Lustre'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19756	BroadStar 0.17G	Arrowwood (Viburnum sp.) V. plicatum var tomentosum 'Mariesii'	Field Container	Neal	NC	2001	Broadcast	No injury from first application when little new growth was present, however after the second application contact foliar burn was observed on new foliage, but plants recovered.
19803	BroadStar 0.17G	Periwinkle (Vinca sp.) V. minor 'Variegata'	Field Container	Derr	VA	2001	Broadcast	Slight to moderate injury increasing with rate (0.17, 0.34, and 0.68 lb ai per acre).
19803	BroadStar 0.17G	Periwinkle (Vinca sp.) 'Sante Fe'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19757	BroadStar 0.17G	Weigela (Weigela sp.) 'Pink Princess'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19759	BroadStar 0.17G	Adam's Needle (Yucca filamentosa) Y. smalliana 'White Edge'	Field Container	Hitcher	NJ	2002	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19955	BroadStar 0.25G	Maple, Japanese (Acer palmatum) 'Bloodgood'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre; good efficacy for hairy bittercress, yellow woodsorrel, hairy willowweed and dandelion.
19955	BroadStar 0.25G	Maple, Japanese (Acer palmatum) 'Atropurpureum'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19870	BroadStar 0.25G	Maple (Acer sp.) A. rubrum	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.97, 1.84 and 3.88 lb ai per acre with single application.
19884	BroadStar 0.25G	Maple (Acer sp.) A. rubrum	Field In-Ground	Hart	NJ	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19884	BroadStar 0.25G	Maple (Acer sp.) A. rubrum	Field In-Ground	Hitcher	NJ	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19870	BroadStar 0.25G	Maple (Acer sp.) A. pennsylvanicum	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
36000	BroadStar 0.25G	Mugwort, White (Artemisia lactiflora) A. schmidtiana	Field Container	Boydston	WA	2003	Broadcast	No injury after single application at all rates (0.25, 0.5, 1.0 lb ai per acre), but plants were beginning to go dormant at the second application so data is inconclusive.

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19961	BroadStar 0.25G	Fern, Japanese Painted (<i>Athyrium goeringianum</i>) 'Pictum'	Field Container	Anderson	OH	2001	Broadcast	Minor to moderate injury with all treatments (0.17, 0.34 or 0.68 lb ai per acre), but plants were not marketable; excellent control of yellow woodsorrel and hairy willowweed.
26669	BroadStar 0.25G	Barberry (<i>Berberis</i> sp.) B. thunbergii 'Rose Glow'	Field Container	Altland	OR	2003	Broadcast	No visible injury or growth suppression at 0.25, 0.5 or 1.0 lb ai per acre.
26669	BroadStar 0.25G	Barberry (<i>Berberis</i> sp.)	Field Container	Hart	NJ	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
25021	BroadStar 0.25G	Camellia (<i>Camellia</i> sp.) 'Bessie Battle'	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
24814	BroadStar 0.25G	Sedge (<i>Carex</i> sp.) <i>C. buchananii</i>	Field Container	Boydston	WA	2004	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre; great control of liverwort, dandelion, northern willow herb, and prickly lettuce.
26145	BroadStar 0.25G	Deodar Cedar (<i>Cedrus deodara</i>)	Field Container	Altland	OR	2003	Broadcast	No visible injury at 0.25, 0.5, and 1.0 lb ai per acre.
23642	BroadStar 0.25G	Hinoki False Cypress (<i>Chamaecyparis obtusa</i>) 'Templehof'	Field Container	Altland	OR	2003	Broadcast	No injury or growth reduction with two applications of 0.25, 0.5, and 1.0 lb ai per acre.
27816	BroadStar 0.25G	Chrysanthemum, Garden (<i>Chrysanthemum/Dendranthema</i> sp.) 'Sheffield Pink'	Field Container	Czarnota	GA	2007	Broadcast	No significant injury at 0.25 lb ai per acre.
20029	BroadStar 0.25G	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Broadcast	Slight injury at 0.25 and 0.5 lb ai per acre and moderate injury at 1.0 lb ai per acre after first application onto new foliage, but no significant injury after second application and no impact on flower spike number or plant growth.
26670	BroadStar 0.25G	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>) <i>C. japonica</i>	Field Container	Gilliam	AL	2003	Broadcast	Some injury appeared over time with 0.375, 0.75 and 1.5 lb ai per acre, however a number of plants died in the untreated controls so interpretation of phytotoxicity impact is confounding; good weed control.
26670	BroadStar 0.25G	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>) 'Hummingbird'	Field Container	Hart	NJ	2003	Broadcast	Slight injury at 0.25 and 0.5 lb ai per acre; moderate at 1.0 lb ai per acre.
19764	BroadStar 0.25G	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i> 'Rosea'	Field Container	Ahrens/Mervosh	CT	2003	Broadcast	Very slight injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre).
19764	BroadStar 0.25G	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i> 'Hoffman No. 5'	Field Container	Beste/Frank (ARS)	MD	2005	Broadcast	Moderate to significant injury increasing with rate (0.375, 0.75, 1.5 lb ai per acre) but plants recovered and were marketable at the end of the experiment.
19823	BroadStar 0.25G	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i>	Field In-Ground	Beste/Frank (ARS)	MD	2005	Broadcast	Transient, moderate injury increasing with rate (0.375, 0.75, 1.5 lb ai per acre) with significant growth reduction; excellent weed control.

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19764	BroadStar 0.25G	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i>	Field Container	Gilliam	AL	2004	Broadcast	Very slight transient injury at 0.5 and 1.0 lb ai per acre with no injury at 0.25 lb ai per acre; great weed control.
25297	BroadStar 0.25G	False Heather, Elfin Herb, Mexican Heather (<i>Cuphea hyssopifolia</i>)	Field In-Ground	Chen	LA	2005	Broadcast	Severe injury and mortality over time with all rates (0.375, 0.75, 1.5 lb ai per acre).
19766	BroadStar 0.25G	Tufted Hair Grass (<i>Deschampsia</i> sp.) 'Goldehaedge'	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19979	BroadStar 0.25G	Pride-of-Rochester (<i>Deutzia</i> sp.) 'Nikko'	Field Container	Anderson	OH	2001	Broadcast	Slight to significant injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre).
26672	BroadStar 0.25G	Field Fescue (<i>Festuca glauca</i>) 'Elijah Blue'	Field Container	Ahrens/Mervosh	CT	2003	Broadcast	No injury at 0.25 lb ai per acre and very slight at 0.5 and 1.0 lb ai per acre; excellent control of large crabgrass and common groundsel.
19912	BroadStar 0.25G	Ash (<i>Fraxinus</i> sp.) <i>F. pennsylvanica</i>	Field In-Ground	Hitcher	NJ	2001	Broadcast	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
19985	BroadStar 0.25G	Gardenia (<i>Gardenia</i> sp.)	Field Container	Gilliam	AL	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19985	BroadStar 0.25G	Gardenia (<i>Gardenia</i> sp.) <i>G. jasminoides</i> 'Klines Hardy'	Field Container	Gilliam	AL	2003	Broadcast	No to very slight injury was observed (0.375, 0.75, 1.5 lb ai per acre); excellent weed control.
28036	BroadStar 0.25G	Hellebore, Black (<i>Helleborus niger</i>) <i>H. orientalis</i>	Field Container	Czarnota	GA	2004	Broadcast	No injury at 0.375 lb ai per acre through 4 weeks after treatment, but very slight injury appeared 8 and 12 weeks after treatments.
20154	BroadStar 0.25G	Hydrangea (<i>Hydrangea</i> sp.) <i>H. macrophylla</i> 'Nikko Blue'	Field Container	Czarnota	GA	2007	Broadcast	Moderate injury at 0.25 lb ai per acre decreasing over time.
20154	BroadStar 0.25G	Hydrangea (<i>Hydrangea</i> sp.)	Field Container	Derr	VA	2008	Broadcast	No significant injury at 0.375 and 0.75, moderate at 1.5 lb ai per acre.
20154	BroadStar 0.25G	Hydrangea (<i>Hydrangea</i> sp.) <i>H. quercifolia</i>	Field Container	Hart	NJ	2003	Broadcast	Slight injury at 0.25 lb ai per acre with severe injury at 1.0 lb ai per acre.
27818	BroadStar 0.25G	Holly (<i>Ilex</i> sp.) 'Conaf'	Field Container	Czarnota	GA	2007	Broadcast	No injury at 0.25 lb ai per acre.
19875	BroadStar 0.25G	Juniper (<i>Juniperus</i> sp.) <i>J. conferta</i> 'Blue Pacific'	Field Container	Gilliam	AL	2003	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre; great weed control.
25694	BroadStar 0.25G	Crape Myrtle (<i>Lagerstroemia indica</i>) 'Tuscarora'	Field Container	Gilliam	AL	2003	Broadcast	No injury at 0.375, 0.75, or 1.5 lb ai per acre; excellent weed control.
25694	BroadStar 0.25G	Crape Myrtle (<i>Lagerstroemia indica</i>) 'Zuni'	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
24983	BroadStar 0.25G	Lantana (<i>Lantana</i> sp.) 'New Gold'	Field In-Ground	Chen	LA	2005	Broadcast	Slight injury at 0.375 and 0.75 lb ai per acre, high at 1.5 lb ai per acre.
27819	BroadStar 0.25G	Lantana (<i>Lantana</i> sp.) 'New Gold'	Field Container	Czarnota	GA	2007	Broadcast	Virtually no injury at 0.25 lb ai per acre.
25023	BroadStar 0.25G	Privet (<i>Ligustrum</i> sp.)	Field Container	Gilliam	AL	2005	Broadcast	No significant injury at 0.25, 0.5 and 1.0 lb ai per acre.
19847	BroadStar 0.25G	Lilyturf, Big Blue (<i>Liriope muscari</i>)	Field In-Ground	Chen	LA	2005	Broadcast	Moderate injury (0.375, 0.75, 1.5 lb ai per acre).

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19789	BroadStar 0.25G	Liriope, Creeping (Liriope spicata)	Field Container	Gilliam	AL	2003	Broadcast	Very slight, transient injury was observed at all rates (0.375, 0.75, 1.5 lb ai per acre); excellent weed control.
19789	BroadStar 0.25G	Liriope, Creeping (Liriope spicata)	Field Container	Gilliam	AL	2004	Broadcast	Minor injury at 0.25, 0.5 and 1.0 lb ai per acre.
24751	BroadStar 0.25G	Loropetalum (Loropetalum sp.) L. chinense rubrum	Field Container	Czarnota	GA	2007	Broadcast	Virtually no injury at 0.25 lb ai per acre.
24751	BroadStar 0.25G	Loropetalum (Loropetalum sp.) L. chinense 'Ruby	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19992	BroadStar 0.25G	Wax Myrtle (Myrica cerifera)	Field Container	Gilliam	AL	2003	Broadcast	No injury at 0.375 lb ai per acre and very slight injury with 0.75 and 1.5 lb ai per acre; excellent weed control.
26668	BroadStar 0.25G	Bayberry, Northern (Myrica pensylvanica)	Field Container	Hart	NJ	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
20050	BroadStar 0.25G	Sacred Bamboo (Nandina domestica)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Broadcast	Moderate to significant injury and decreased growth increasing with rate (0.375, 0.75, 1.5 lb ai per acre) but plants exhibited minimal visible phytotoxicity at trial's end.
19851	BroadStar 0.25G	Mondo Grass; Lilyturf; Ker-Gawl (Ophiopogon sp.) O. japonicus	Field Container	Fain	MS	2003	Broadcast	Slight injury at all rates (0.25, 0.5, 1.0 lb ai per acre); excellent weed control.
19855	BroadStar 0.25G	Reed Canarygrass (Phalaris arundinacea)	Field Container	Boydston	WA	2003	Broadcast	Minor to severe necrosis increasing with rate (0.375, 0.75, 1.5 lb ai per acre).
24987	BroadStar 0.25G	Phlox (Phlox sp.) 'Candy Strip'	Field In-Ground	Chen	LA	2005	Broadcast	Minor to moderate injury after first application increasing with rate (0.375, 0.75, 1.5 lb ai per acre) but severe injury and mortality occurred after second at all rates.
19881	BroadStar 0.25G	Spruce (Picea sp.) P. abies 'Nidiformis'	Field Container	Altland	OR	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19881	BroadStar 0.25G	Spruce (Picea sp.) P. glauca conica	Field Container	Altland	OR	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
20054	BroadStar 0.25G	Andromeda, Fetterbush (Pieris sp.) 'Dorothy Wycoff'	Field In-Ground	Beste/Frank (ARS)	MD	2005	Broadcast	No significant injury.
26673	BroadStar 0.25G	Pine, Mugo (Pinus mugo) 'pumilo'	Field Container	Altland	OR	2003	Broadcast	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
23644	BroadStar 0.25G	Pine, Austrian (Pinus nigra)	Field Container	Altland	OR	2003	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19929	BroadStar 0.25G	Pine, Austrian (Pinus nigra)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Broadcast	Slight injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre), but all plants marketable at end of the study; good weed control.
20001	BroadStar 0.25G	Yew Plum Pine (Podocarpus macrophyllus)	Field Container	Gilliam	AL	2004	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
25487	BroadStar 0.25G	Azalea (Rhododendron sp.) 'Formosa'	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.

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25487	BroadStar 0.25G	Azalea (Rhododendron sp.) 'Hino'	Field Container	Gilliam	AL	2005	Broadcast	None at 0.25 lb ai per acre, minor at 0.5 and 1.0 lb ai per acre, but plants grew out of it through the season.
25487	BroadStar 0.25G	Azalea (Rhododendron sp.) 'White Glacier'	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
25487	BroadStar 0.25G	Azalea (Rhododendron sp.) 'White Gumpo'	Field Container	Gilliam	AL	2005	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
27828	BroadStar 0.25G	Rose (Rosa sp.) 'Nearly Wild'	Field Container	Czarnota	GA	2007	Broadcast	No significant injury at 0.25 lb ai per acre.
19748	BroadStar 0.25G	Rosemary (Rosmarinus officinalis) 'Athens Blues Spires'	Field Container	Linderman	OR	2002	Broadcast	No injury at 0.17, 0.34 and 0.68 lb ai per acre.
25302	BroadStar 0.25G	Carolina Wild Petunia (Ruellia caroliniensis) R. brittoniana 'Katie'	Field In-Ground	Chen	LA	2005	Broadcast	Slight to moderate injury after first application increasing with rate (0.375, 0.75, 1.5 lb ai per acre) but severe injury with mortality after second application.
19857	BroadStar 0.25G	Woodland Sage (Salvia x sylvestris) 'Blue Hill' & 'Snow Hill'	Field Container	Boydston	WA	2003	Broadcast	No visible injury after single application with 0.375, 0.75, and 1.5 lb ai per acre.
26671	BroadStar 0.25G	Bridal-Wreath (Spiraea sp.) S. nipponica 'Snowmound'	Field Container	Ahrens/ Mervosh	CT	2003	Broadcast	Slight to moderate injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre); excellent efficacy for large crabgrass and common groundsel.
19751	BroadStar 0.25G	Lilac (Syringa sp.) S. josikaea	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19754	BroadStar 0.25G	Ternstroemia (Ternstroemia sp.)	Field Container	Gilliam	AL	2005	Broadcast	Significant spotting initially at all rates (0.25, 0.5 and 1.0 lb ai per acre), but plants grew out of it through the season.
19800	BroadStar 0.25G	Jasmine, Asian Star (Trachelospermum asiaticum)	Field Container	Gilliam	AL	2004	Broadcast	No injury at 0.25, 0.5 and 1.0 lb ai per acre.
19802	BroadStar 0.25G	Vervain (Verbena sp.) V. canadensis	Field Container	Anderson	OH	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
19861	BroadStar 0.25G	Vervain (Verbena sp.) V. canadensis 'Homestead Purple'	Field In-Ground	Chen	LA	2005	Broadcast	No significant injury at 0.375 and 0.75 lb ai per acre, slight at 1.5 lb ai per acre.
19802	BroadStar 0.25G	Vervain (Verbena sp.) 'Quartz White'	Field Container	Linderman	OR	2001	Broadcast	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
27076	BroadStar 0.25G VC1604	Abelia (Abelia sp.) 'Edward Goucher'	Field Container	Lieth	CA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27076	BroadStar 0.25G VC1604	Abelia (Abelia sp.) A. grandiflora	Field Container	Neal	NC	2009	Broadcast	No significant injury at 0.375, 0.75 and 1.5 lb ai per acre.
27076	BroadStar 0.25G VC1604	Abelia (Abelia sp.) A. zanderi 'Little Richard'	Field Container	Senesac	NY	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27076	BroadStar 0.25G VC1604	Abelia (Abelia sp.) A. grandiflora 'Edward Goucher'	Field Container	Trader	MS	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27079	BroadStar 0.25G VC1604	Fir (Abies sp.) A. fraseri	Field Container	Boydston	WA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
27079	BroadStar 0.25G VC1604	Fir (Abies sp.) A. fraseri	Field Container	Boydston	WA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants saleable.
27079	BroadStar 0.25G VC1604	Fir (Abies sp.) A. balsamea	Field Container	Freiberger	NJ	2008	Directed	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27079	BroadStar 0.25G VC1604	Fir (Abies sp.) Fir Idaho Grand	Field Container	Harvey	WA	2009	Broadcast	One application only; no significant injury at 0.375, 0.75 and 1.5 lb ai per acre.
27084	BroadStar 0.25G VC1604	Maple, Japanese (Acer palmatum) 'Atropurpureum'	Field Container	Beste/Frank (ARS)	MD	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27084	BroadStar 0.25G VC1604	Maple, Japanese (Acer palmatum) 'Atropurpureum'	Field Container	Beste/Frank (ARS)	MD	2009	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27084	BroadStar 0.25G VC1604	Maple, Japanese (Acer palmatum) Maple Japanese	Field Container	Harvey	WA	2009	Broadcast	One application only; no injury at 0.375, 0.75 and 1.5 lb ai per acre.
27084	BroadStar 0.25G VC1604	Maple, Japanese (Acer palmatum)	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
27088	BroadStar 0.25G VC1604	Maple, Red (Acer rubrum) 'Summer'	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with two applications.
27088	BroadStar 0.25G VC1604	Maple, Red (Acer rubrum)	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
27088	BroadStar 0.25G VC1604	Maple, Red (Acer rubrum)	Field Container	Senesac	NY	2008	Broadcast	Slight injury with complete recovery at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27093	BroadStar 0.25G VC1604	Maple (Acer sp.) A. palmatum	Field Container	Ahrens/Mervosh	CT	2009	Broadcast	Minor crop injury and no reduction in growth with 0.375, 0.75, 1.5 lb ai per acre.
27093	BroadStar 0.25G VC1604	Maple (Acer sp.) A. saccharinum	Field Container	Derr	VA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27093	BroadStar 0.25G VC1604	Maple (Acer sp.) A. ginnala	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
27093	BroadStar 0.25G VC1604	Maple (Acer sp.) A. saccharum	Field Container	Senesac	NY	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
28469	BroadStar 0.25G VC1604	Lily-Of-The-Nile (Agapanthus sp.) A. sp.	Field Container	Derr	VA	2010	Broadcast	Three to five percent crop injury (tip burn) which decreased over time (32 and 46 DAT and 3 DAT2. Weed control (chamberbitter, tassleflower, S. crabgrass, annual sedge) increased with increasing rates.
28469	BroadStar 0.25G VC1604	Lily-Of-The-Nile (Agapanthus sp.) 'Blue'	Field Container	Neal	NC	2005	Broadcast	Moderate but statistically significant crop injury with 0.375 lb ai per acre with one and two applications.
28469	BroadStar 0.25G VC1604	Lily-Of-The-Nile (Agapanthus sp.) A. africanus 'Peter Pan'	Field Container	Uber	CA	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
28469	BroadStar 0.25G VC1604	Lily-Of-The-Nile (<i>Agapanthus</i> sp.)	Field Container	Wilén	CA	2010	Broadcast	No crop injury or reduction in growth index with one and two applications of 150, 300 and 600 lb per acre. Some brown streaking was noted with 300 lb rate 2 WAT but plant grew out of it by 4WAT.
34934	BroadStar 0.25G VC1604	Big Blue Stem (<i>Andropogon gerardii</i>)	Field Container	Moretti	OR	2022	Broadcast	Minor to no injury from two applications at 150, 300 or 600 lb/a. Plant volume not different from nontreated, regardless of rate.
34934	BroadStar 0.25G VC1604	Big Blue Stem (<i>Andropogon gerardii</i>)	Field Container	Reding	OH	2022	Broadcast	Slight to moderate chlorosis increasing with rate (150, 300, 600 lb per acre), but no statistically significant impact on height, weight or flowering by the end of the experiment. Plants treated with 4x were noticeably taller.
34934	BroadStar 0.25G VC1604	Big Blue Stem (<i>Andropogon gerardii</i>)	Field Container	Witcher	TN	2022	Broadcast	No injury or plant growth reductions from two applications at 150, 300 or 600 lb/a.
34935	BroadStar 0.25G VC1604	Broom Sedge Bluestem (<i>Andropogon virginicus</i>)	Field Container	Derr	VA	2023	Broadcast	No injury with 150, 300 and 600 lb per acre.
27100	BroadStar 0.25G VC1604	Barberry (<i>Berberis</i> sp.) B. thunbergii atropurpureum 'Crimson Pygmy'	Field Container	Beste/Frank (ARS)	MD	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27100	BroadStar 0.25G VC1604	Barberry (<i>Berberis</i> sp.) B. thunbergii 'Crimson Pigmy'	Field Container	Lieth	CA	2008	Broadcast	Phytotoxicity data inconclusive, no significant growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27100	BroadStar 0.25G VC1604	Barberry (<i>Berberis</i> sp.) B. thunbergii 'Amber Glow'	Field Container	Uber	CA	2008	Broadcast	Although plants suffered environmental stress, data showed no or less injury and taller plants than untreated at 0.375, 0.75 and 1.5 lb ai per acre.
27100	BroadStar 0.25G VC1604	Barberry (<i>Berberis</i> sp.) B. thunbergii 'Crimson Pygmy'	Field Container	Williams	IL	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27103	BroadStar 0.25G VC1604	Butterfly Bush (<i>Buddleia davidii</i>) 'Pink Delight'	Field Container	Beste/Frank (ARS)	MD	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27103	BroadStar 0.25G VC1604	Butterfly Bush (<i>Buddleia davidii</i>)	Field Container	Derr	VA	2008	Broadcast	No significant injury at 0.375, 0.75, and 1.5 lb ai per acre.
27103	BroadStar 0.25G VC1604	Butterfly Bush (<i>Buddleia davidii</i>) 'Nanho Blue'	Field Container	Mathers (OSU)	OH	2008	Broadcast	No significant injury and growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27106	BroadStar 0.25G VC1604	Boxwood (<i>Buxus</i> sp.) B. 'Green Mountain'	Field Container	Senesac	NY	2008	Broadcast	No injury but slight growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27106	BroadStar 0.25G VC1604	Boxwood (<i>Buxus</i> sp.) B. 'Wintergem'	Field Container	Trader	MS	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
34936	BroadStar 0.25G VC1604	Feather Reed Grass (<i>Calamagrostis acutiflora</i>)	Field Container	Derr	VA	2022	Broadcast	Minor injury with 100, 200, 400 lb product per acre
34936	BroadStar 0.25G VC1604	Feather Reed Grass (<i>Calamagrostis acutiflora</i>) 'Karl Foerster'	Field Container	Moretti	OR	2022	Broadcast	Minor to moderate injury from two applications at 150, 300 or 600 lb/a. Plant volume not different from nontreated, regardless of rate.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
34936	BroadStar 0.25G VC1604	Feather Reed Grass (Calamagrostis acutiflora)	Field Container	Reding	OH	2022	Broadcast	Slight chlorosis with 150, 300 and 600 lb per acre, but all rates reduced height. No impact on flowering.
27111	BroadStar 0.25G VC1604	Camellia (Camellia sp.) C. vernalis 'Yuletide'	Field Container	Gilliam	AL	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27111	BroadStar 0.25G VC1604	Camellia (Camellia sp.) C. sasanqua 'Pink Charm'	Field Container	Trader	MS	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27111	BroadStar 0.25G VC1604	Camellia (Camellia sp.) C. japonica	Field Container	Wade	SC	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27111	BroadStar 0.25G VC1604	Camellia (Camellia sp.) C. japonica	Field Container	Wade	GA	2009	Broadcast	No injury or significant growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27796	BroadStar 0.25G VC1604	Sedge, Grassland (Carex divulsa) C. oshimensis 'Evergold'	Field Container	Boydston	WA	2010	Broadcast	Slight injury at 0.375 and 0.75, moderate at 1.5 lb ai per acre; no growth reduction; plants at 1X and 2X saleable.
27796	BroadStar 0.25G VC1604	Sedge, Grassland (Carex divulsa)	Field Container	Wilén	CA	2009	Broadcast	One application only. No significant injury at 0.375, 0.75 and 1.5 lb ai per acre; root dry weight significantly reduced at all rates.
29256	BroadStar 0.25G VC1604	Blue Beard, Blue Spirea (Caryopteris x clandonensis) 'Sunshine Blue'	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375 and 0.75, slight at 1.5 lb ai per acre.
28729	BroadStar 0.25G VC1604	Ceanothus, Maritime (Ceanothus maritimus)	Field Container	Grunwald	OR	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
28729	BroadStar 0.25G VC1604	Ceanothus, Maritime (Ceanothus maritimus)	Field Container	Lieth	CA	2011	Broadcast	No injury or significant growth reduction with 0.375, 0.75 and 1.5 lb ai per acre applied twice.
28729	BroadStar 0.25G VC1604	Ceanothus, Maritime (Ceanothus maritimus) C. maritimus 'Dark Star'	Field Container	Wilén	CA	2010	Broadcast	Only one application at 150, 300, 600 lb per acre was applied which resulted in minor to significant crop 4 WAT injury which decreased with increasing rates. Trial should be repeated with a different Ceanothus cultivar or established 3 gal container plant
29235	BroadStar 0.25G VC1604	Ceanothus (Ceanothus sp.) C. americanus	Field Container	Mathers (OSU)	OH	2011	Broadcast	Leaf spotting observed from two sequential applications at 0.375, 0.75, 1.5 lb ai per acre. Unacceptable injury ratings 2WAT with 4X but all plants marketable.
29235	BroadStar 0.25G VC1604	Ceanothus (Ceanothus sp.) 'Concha'	Field Container	Wilén	CA	2009	Broadcast	One application only. No significant injury at 0.375, 0.75 and 1.5 lb ai per acre; root and shoot dry weights significantly reduced at all rates.
28733	BroadStar 0.25G VC1604	Wild Lilac (Ceanothus x pallida) 'Marie Simon'	Field Container	Grunwald	OR	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
28733	BroadStar 0.25G VC1604	Wild Lilac (Ceanothus x pallida)	Field Container	Lieth	CA	2011	Broadcast	No injury with 0.375 and 0.75, slight with 1.5 lb ai per acre, applied twice; high growth reduction at 4X.
27117	BroadStar 0.25G VC1604	Leather Flower (Clematis sp.) 'Josephine' and 'Nellie Mosier'	Field Container	Boydston	WA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants saleable.

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27117	BroadStar 0.25G VC1604	Leather Flower (Clematis sp.)	Field Container	Derr	VA	2008	Broadcast	No significant injury at 0.375, 0.75, and 1.5 lb ai per acre.
27117	BroadStar 0.25G VC1604	Leather Flower (Clematis sp.) C. integrifolia	Field Container	Klett	CO	2008	Broadcast	Trial 1: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27117	BroadStar 0.25G VC1604	Leather Flower (Clematis sp.) C. integrifolia	Field Container	Klett	CO	2008	Broadcast	Trial 2: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27122	BroadStar 0.25G VC1604	Sweet Pepperbush, Summersweet (Clethra alnifolia)	Field Container	Gilliam	AL	2010	Broadcast	Injury with one application at 0.374, 0.75, 1.5 lb ai per acre but injury unrelated to treatment was present. Reduced growth with 1x and 4x.
27122	BroadStar 0.25G VC1604	Sweet Pepperbush, Summersweet (Clethra alnifolia)	Field Container	Reding	OH	2010	Broadcast	No crop injury with 0.37, 0.75, 1.5 lb ai per acre.
27127	BroadStar 0.25G VC1604	Dogwood, Flowering (Cornus florida)	Field Container	Ahrens/Mervosh	CT	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre after 1st, slight after 2nd application.
27127	BroadStar 0.25G VC1604	Dogwood, Flowering (Cornus florida)	Field Container	Ahrens/Mervosh	CT	2009	Broadcast	Moderate crop injury with 2x and 4x but no reduction in growth after two applications at 0.375, 0.75, 1.5 lb ai per acre.
27127	BroadStar 0.25G VC1604	Dogwood, Flowering (Cornus florida)	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
27132	BroadStar 0.25G VC1604	Cotoneaster (Cotoneaster sp.) C. horizontalis 'Perpusillus'	Field Container	Lieth	CA	2008	Broadcast	Phytotoxicity data inconclusive due to heat stress, no growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27132	BroadStar 0.25G VC1604	Cotoneaster (Cotoneaster sp.) C. glaucophyllus	Field Container	Uber	CA	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27137	BroadStar 0.25G VC1604	Hawthorn (Crataegus sp.) C. coccinoid	Field Container	Freiberger	NJ	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre applied once at 2nd applic timing.
27137	BroadStar 0.25G VC1604	Hawthorn (Crataegus sp.) C. monogyna	Field Container	Mathers (OSU)	OH	2011	Broadcast	Leaf spotting observed from two sequential applications at 0.375, 0.75, 1.5 lb ai per acre. All plants marketable.
27137	BroadStar 0.25G VC1604	Hawthorn (Crataegus sp.)	Field Container	Reding	OH	2010	Broadcast	No crop injury with 0.37, 0.75, 1.5 lb ai per acre but significant reduction in height with 1x and 4x compared to untreated. All plants were marketable.
27142	BroadStar 0.25G VC1604	Japanese Cedar (Cryptomeria japonica) 'Yoshino'	Field Container	Beste/Frank (ARS)	MD	2010	Broadcast	No crop injury or reduction in height x width with one application at 0.374, 0.75, 1.5 lb ai per acre. Pots treated with 4x were devoid of weeds.
27142	BroadStar 0.25G VC1604	Japanese Cedar (Cryptomeria japonica) 'Yoshino'	Field Container	Czarnota	GA	2009	Broadcast	No significant injury at 0.375, 0.75 and 1.5 lb ai per acre.
27142	BroadStar 0.25G VC1604	Japanese Cedar (Cryptomeria japonica) 'Black Dragon'	Field Container	Neal	NC	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
28709	BroadStar 0.25G VC1604	Hummingbird Trumpet (Epilobium canum)	Field Container	Wilén	CA	2009	Broadcast	One application only. No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
34937	BroadStar 0.25G VC1604	Weeping Lovegrass (<i>Eragrostis curvula</i>)	Field Container	Marble	FL	2022	Broadcast	Minor to moderate phyto after both applications of 600 lb/a. Minor to no phyto from 150 and 300 lb/a.
34937	BroadStar 0.25G VC1604	Weeping Lovegrass (<i>Eragrostis curvula</i>)	Field Container	Senesac	NY	2022	Broadcast	Slight to minor injury increasing with rate (2.5, 5.0, 10.0 lb ai per acre).
34937	BroadStar 0.25G VC1604	Weeping Lovegrass (<i>Eragrostis curvula</i>)	Field Container	Witcher	TN	2022	Broadcast	No injury or plant growth reductions from two applications at 150, 300 or 600 lb/a.
27147	BroadStar 0.25G VC1604	Burning Bush (<i>Euonymus alatus</i>) <i>E. alatus</i> 'Compactus'	Field Container	Boydston	WA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27147	BroadStar 0.25G VC1604	Burning Bush (<i>Euonymus alatus</i>) <i>E. fortunei</i> 'Coloratus'	Field Container	Williams	IL	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
28258	BroadStar 0.25G VC1604	Forsythia (<i>Forsythia</i> sp.) <i>F. x intermedia</i> 'Golden Bell'	Field Container	Mickelbart	IN	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with single application 3 weeks after transplanting.
27153	BroadStar 0.25G VC1604	Locust (<i>Gleditsia</i> sp.) <i>G. triacanthos</i> 'inermis' Willd	Field Container	Beste/Frank (ARS)	MD	2010	Broadcast	No crop injury or reduction in growth with once application at 0.374, 0.75, or 1.5 lb ai per acre. Excellent control of large crabgrass, eclipta, yellow woodsorrel, pennsylvania bittercress, carpet weed, and spotted spurge.
27153	BroadStar 0.25G VC1604	Locust (<i>Gleditsia</i> sp.) <i>G. internis</i>	Field Container	Freiberger	NJ	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre applied once at 2nd applic timing.
27153	BroadStar 0.25G VC1604	Locust (<i>Gleditsia</i> sp.) <i>Gleditsia triacanthos</i>	Field Container	Mathers (OSU)	OH	2009	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27153	BroadStar 0.25G VC1604	Locust (<i>Gleditsia</i> sp.) <i>G. triacanthos</i>	Field Container	Reding	OH	2010	Broadcast	No injury with 0.37, 0.75, 1.5 lb ai per acre.
34938	BroadStar 0.25G VC1604	Hakone Grass (<i>Hakonechloa</i> sp.) 'All Gold'	Field Container	Cochran	MD	2023	Broadcast	No injury or impact on growth with 0.375, 0.75, and 1.5 lb ai per acre. All plants exhibited similar browning of leaves.
34938	BroadStar 0.25G VC1604	Hakone Grass (<i>Hakonechloa</i> sp.) <i>H. macra</i> 'All Gold'	Field Container	Mathers	OH	2023	Broadcast	No significant injury after one application at 0.375, 0.75, and 1.5 lb ai per acre, but moderate injury at all rates after second application.
28741	BroadStar 0.25G VC1604	Toyon (<i>Heteromeles arbutifolia</i>)	Field Container	Wilens	CA	2009	Broadcast	One application only. Acceptable injury at 0.375, 0.75 and 1.5 lb ai per acre; root and shoot dry weights not reduced.
27157	BroadStar 0.25G VC1604	Hydrangea (<i>Hydrangea</i> sp.) <i>H. macrophylla</i> 'Nikko Blue'	Field Container	Fraelich	GA	2008	Broadcast	No injury or growth reduction at 150, 300 and 600 lb per acre; all plants marketable.
27157	BroadStar 0.25G VC1604	Hydrangea (<i>Hydrangea</i> sp.)	Field Container	Lieth	CA	2008	Broadcast	Moderate injury and growth reduction at 0.375, 0.75 and 1.5 lb ai per acre. However, plants were heat stressed and non-treated controls exhibited blemishes.
27157	BroadStar 0.25G VC1604	Hydrangea (<i>Hydrangea</i> sp.) <i>H. paniculata</i> 'PeeGee'	Field Container	Mickelbart	IN	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with single application 3 weeks after transplanting.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
35907	BroadStar 0.25G VC1604	Stonecrop, October Daphne (<i>Hylotelephium sieboldii</i>)	Field Container	Derr	VA	2023	Broadcast	Severe injury with 150, 300 and 600 lb per acre.
27160	BroadStar 0.25G VC1604	Holly (<i>Ilex sp.</i>) <i>I. vomitoria</i>	Field Container	Lieth	CA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27160	BroadStar 0.25G VC1604	Holly (<i>Ilex sp.</i>) <i>I. crenata</i> 'Convexa'	Field Container	Mathers (OSU)	OH	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27160	BroadStar 0.25G VC1604	Holly (<i>Ilex sp.</i>) <i>I. cornuta</i> 'Needlepoint'	Field Container	Neal	NC	2009	Broadcast	No significant injury at 0.375, 0.75 and 1.5 lb ai per acre.
27160	BroadStar 0.25G VC1604	Holly (<i>Ilex sp.</i>) <i>I. glabra</i> 'Densa'	Field Container	Senesac	NY	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
34939	BroadStar 0.25G VC1604	Common Rush (<i>Juncus effusus</i>) 'Big Twister'	Field Container	Cochran	MD	2023	Broadcast	No injury or impact on growth with 0.375, 0.75, and 1.5 lb ai per acre.
34939	BroadStar 0.25G VC1604	Common Rush (<i>Juncus effusus</i>) 'Big Twister'	Field Container	Mathers	OH	2022	Broadcast	Severe crop injury observed after each of two applications of 0.375, 0.75 or 1.5 lb ai/a.
34939	BroadStar 0.25G VC1604	Common Rush (<i>Juncus effusus</i>) 'Big Twister'	Field Container	Moretti	OR	2022	Broadcast	Moderate to severe injury from two applications at 150, 300, or 600 lb/a. Lower injury observed after first application of two lower rates. Plant volume data variable and non-significant.
27163	BroadStar 0.25G VC1604	Juniper (<i>Juniperus sp.</i>) <i>J. andorra</i>	Field Container	Harvey	WA	2008	Broadcast	1 application only; no injury at 0.375, 0.75 and 1.5 lb ai per acre.
27163	BroadStar 0.25G VC1604	Juniper (<i>Juniperus sp.</i>) <i>J. chinensis</i> 'Sea Green'	Field Container	Mickelbart	IN	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with single application 3 weeks after transplanting.
27163	BroadStar 0.25G VC1604	Juniper (<i>Juniperus sp.</i>) <i>J. communis</i> 'Gold Totem Pole'	Field Container	Senesac	NY	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27163	BroadStar 0.25G VC1604	Juniper (<i>Juniperus sp.</i>) <i>J. conferta</i>	Field Container	Trader	MS	2008	Broadcast	No significant injury at 0.375 and 0.75, slight at 1.5 lb ai per acre; no growth reduction
27166	BroadStar 0.25G VC1604	Crape Myrtle (<i>Lagerstroemia indica</i>)	Field Container	Derr	VA	2008	Broadcast	No significant injury at 0.375, 0.75, and 1.5 lb ai per acre.
27166	BroadStar 0.25G VC1604	Crape Myrtle (<i>Lagerstroemia indica</i>)	Field Container	Fraelich	GA	2008	Broadcast	No injury or growth reduction at 150, 300 and 600 lb per acre; all plants marketable.
27166	BroadStar 0.25G VC1604	Crape Myrtle (<i>Lagerstroemia indica</i>) 'Acoma'	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre with two applications.
27166	BroadStar 0.25G VC1604	Crape Myrtle (<i>Lagerstroemia indica</i>) 'Natchez'	Field Container	Wade	SC	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27171	BroadStar 0.25G VC1604	Lavender (<i>Lavandula sp.</i>) <i>L. angustifolia</i> 'Munstead'	Field Container	Boydston	WA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27171	BroadStar 0.25G VC1604	Lavender (<i>Lavandula sp.</i>) <i>L. angustifolia</i> 'Hidcote'	Field Container	Boydston	WA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
27171	BroadStar 0.25G VC1604	Lavender (<i>Lavandula sp.</i>) <i>L. angustifolia</i> 'Munstead'	Field Container	Neal	NC	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27171	BroadStar 0.25G VC1604	Lavender (<i>Lavandula sp.</i>) <i>L. angustifolia</i> 'Munstead'	Field Container	Trader	MS	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
27176	BroadStar 0.25G VC1604	Doghobble (<i>Leucothoe</i> sp.) <i>L. fontanesiana</i> 'Rainbow'	Field Container	Grunwald	OR	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
28472	BroadStar 0.25G VC1604	Privet (<i>Ligustrum</i> sp.) <i>L. lucidum</i>	Field Container	Uber	CA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre after 1st, moderate after 2nd application; growth reduction at 2X and 4X.
27179	BroadStar 0.25G VC1604	Loropetalum (<i>Loropetalum</i> sp.) <i>L. chinense rubrum</i>	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27179	BroadStar 0.25G VC1604	Loropetalum (<i>Loropetalum</i> sp.) <i>L. chinense rubrum</i>	Field Container	Czarnota	GA	2009	Broadcast	No significant injury at 0.375, 0.75 and 1.5 lb ai per acre.
27179	BroadStar 0.25G VC1604	Loropetalum (<i>Loropetalum</i> sp.)	Field Container	Derr	VA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27179	BroadStar 0.25G VC1604	Loropetalum (<i>Loropetalum</i> sp.) 'Purple Diamond'	Field Container	Gilliam	AL	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27179	BroadStar 0.25G VC1604	Loropetalum (<i>Loropetalum</i> sp.)	Field Container	Neal	NC	2009	Broadcast	No significant injury at 0.375 and 0.75, slight at 1.5 lb ai per acre.
27182	BroadStar 0.25G VC1604	Magnolia (<i>Magnolia</i> sp.) <i>M. stellata</i> 'Royal Star'	Field Container	Beste/Frank (ARS)	MD	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27182	BroadStar 0.25G VC1604	Magnolia (<i>Magnolia</i> sp.) 'Waterlily'	Field Container	Beste/Frank (ARS)	MD	2009	Broadcast	No significant injury at 0.375, 0.75 and 1.5 lb ai per acre; reduced growth and marketability only with 4X.
27182	BroadStar 0.25G VC1604	Magnolia (<i>Magnolia</i> sp.) <i>M. virginiana</i>	Field Container	Mathers (OSU)	OH	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27182	BroadStar 0.25G VC1604	Magnolia (<i>Magnolia</i> sp.)	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
27182	BroadStar 0.25G VC1604	Magnolia (<i>Magnolia</i> sp.) <i>M. grandiflora</i> 'Alta'	Field Container	Wade	SC	2009	Broadcast	No injury or significant growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27187	BroadStar 0.25G VC1604	Apple, Non-bearing (<i>Malus</i> sp.) 'M.domestica'	Field Container	Mathers (OSU)	OH	2009	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27187	BroadStar 0.25G VC1604	Apple, Non-bearing (<i>Malus</i> sp.)	Field Container	Reding	OH	2009	Broadcast	No injury and no significant difference in growth or marketability with 0.375, 0.75 and 1.5 lb ai per acre.
34940	BroadStar 0.25G VC1604	Muhly, Hairyawn (<i>Muhlenbergia capillaris</i>)	Field Container	Cochran	MD	2022	Broadcast	Slight injury increasing with rate (0.375, 0.75, and 1.5 lb ai per acre), the 2x and 4x rates caused significant stunting.
34940	BroadStar 0.25G VC1604	Muhly, Hairyawn (<i>Muhlenbergia capillaris</i>)	Field Container	Moretti	OR	2022	Broadcast	No injury or plant volume reduction from 150 lb/a applied twice. Moderate to severe injury and significant plant volume reductions from 300 and 600 lb/a applied twice.
34940	BroadStar 0.25G VC1604	Muhly, Hairyawn (<i>Muhlenbergia capillaris</i>)	Field Container	Robbins	NM	2023	Broadcast	No to slight injury increasing with rate, but no impact on plant height or bloom with 150, 300, and 600 lb per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
28713	BroadStar 0.25G VC1604	Pine Muhly (<i>Muhlenbergia dubia</i>)	Field Container	Wilen	CA	2009	Broadcast	One application only. No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27190	BroadStar 0.25G VC1604	Sacred Bamboo (<i>Nandina domestica</i>) 'Firepower'	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre with two applications.
27190	BroadStar 0.25G VC1604	Sacred Bamboo (<i>Nandina domestica</i>)	Field Container	Gilliam	AL	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27190	BroadStar 0.25G VC1604	Sacred Bamboo (<i>Nandina domestica</i>) <i>N. domestica</i>	Field Container	Lieth	CA	2009	Broadcast	Crop injury observed (approx 15-30%) by 4WAT with 0.375, and 1.5 lb aia (1x and 4x) but no significant reduction in height and width parameters were observed with any rate. Crop injury described as leaf distortion and chlorosis and red to purple leaflet v
27190	BroadStar 0.25G VC1604	Sacred Bamboo (<i>Nandina domestica</i>)	Field Container	Uber	CA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27195	BroadStar 0.25G VC1604	Catnip (<i>Nepeta cataria</i>) 'Psfike'	Field Container	Klett	CO	2008	Broadcast	Trial 1: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27195	BroadStar 0.25G VC1604	Catnip (<i>Nepeta cataria</i>) 'Psfike'	Field Container	Klett	CO	2008	Broadcast	Trial 2: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27195	BroadStar 0.25G VC1604	Catnip (<i>Nepeta cataria</i>) <i>N. cataria</i>	Field Container	Lieth	CA	2009	Broadcast	Significant crop injury (approx 15-35%) with 0.375, 0.75, and 1.5 lb aia at 30 DAT and plant canopy 23, 17, and 38% smaller, respectively, than untreated.
27200	BroadStar 0.25G VC1604	<i>Nepeta</i> (<i>Nepeta x faassenii</i>) 'Walkers Low'	Field Container	Boydston	WA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
27200	BroadStar 0.25G VC1604	<i>Nepeta</i> (<i>Nepeta x faassenii</i>)	Field Container	Lieth	CA	2008	Broadcast	Unacceptable injury and growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27200	BroadStar 0.25G VC1604	<i>Nepeta</i> (<i>Nepeta x faassenii</i>)	Field Container	Wilen	CA	2012	Broadcast	Slight, acceptable injury with 150, 300 and 600 lb per acre after 1st applic 3 days after transplanting, unacceptable injury at the high rate after 2nd applic; growth reduction at all rates.
29247	BroadStar 0.25G VC1604	Mondo Grass; Lilyturf; Ker-Gawl (<i>Ophiopogon</i> sp.) <i>O. japonicas</i>	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
29255	BroadStar 0.25G VC1604	Olive, Holly (<i>Osmanthus heterophyllus</i>) Holly Olive, False	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375 and 0.75, slight at 1.5 lb ai per acre.
29085	BroadStar 0.25G VC1604	Peony (<i>Paeonia</i> sp.) <i>P. lactiflora</i> 'Edulis Superba'	Field Container	Boydston	WA	2011	Broadcast	No crop injury or reduction in growth with two applications at 0.375, 0.75, 1.5 lb ai per acre.
29085	BroadStar 0.25G VC1604	Peony (<i>Paeonia</i> sp.) <i>P. lactiflora</i> 'Eliza Lundy'	Field Container	Grunwald	OR	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
28737	BroadStar 0.25G VC1604	Mock Orange (<i>Philadelphus</i> sp.) <i>P. viginalis</i> 'Snow Dwarf'	Field Container	Czarnota	GA	2009	Broadcast	No significant injury at 0.375 and 0.75, moderate at 1.5 lb ai per acre.
28476	BroadStar 0.25G VC1604	Chokeberry (<i>Photinia</i> sp.) <i>P. fraseri</i>	Field Container	Uber	CA	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
27206	BroadStar 0.25G VC1604	Spruce (Picea sp.) P. glauca	Field Container	Freiberger	NJ	2009	Broadcast	Virtually no injury at 0.375, 0.75 and 1.5 lb ai per acre applied once at 2nd applic timing.
27206	BroadStar 0.25G VC1604	Spruce (Picea sp.) P. omorika	Field Container	Harvey	WA	2008	Broadcast	1 application only; no injury at 0.375, 0.75 and 1.5 lb ai per acre.
27206	BroadStar 0.25G VC1604	Spruce (Picea sp.) P. glauca 'Conica'	Field Container	Mathers (OSU)	OH	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27211	BroadStar 0.25G VC1604	Andromeda, Fetterbush (Pieris sp.) P. japonica 'Dorothy Wycoff'	Field Container	Beste/Frank (ARS)	MD	2009	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27211	BroadStar 0.25G VC1604	Andromeda, Fetterbush (Pieris sp.) P. japonica 'Mountain Fire'	Field Container	Trader	MS	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27216	BroadStar 0.25G VC1604	Pine (Pinus sp.) P. taeda	Field Container	Fraelich	GA	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27216	BroadStar 0.25G VC1604	Pine (Pinus sp.) P. mugo	Field Container	Harvey	WA	2008	Broadcast	1 application only; no injury at 0.375, 0.75 and 1.5 lb ai per acre.
27216	BroadStar 0.25G VC1604	Pine (Pinus sp.) Pine Mungo	Field Container	Harvey	WA	2009	Broadcast	One application only; no injury at 0.375, 0.75 and 1.5 lb ai per acre.
27216	BroadStar 0.25G VC1604	Pine (Pinus sp.) P. taeda	Field Container	Wade	SC	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27221	BroadStar 0.25G VC1604	Cinquefoil; Potentilla (Potentilla sp.) P. verna	Field Container	Boydston	WA	2009	Broadcast	No significant injury at 0.375 and 0.75, slight at 1.5 lb ai per acre; all 1X and 2X, and most 4X treated plants saleable.
27221	BroadStar 0.25G VC1604	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Monsidh'	Field Container	Klett	CO	2008	Broadcast	Trial 1: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27221	BroadStar 0.25G VC1604	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Monsidh'	Field Container	Klett	CO	2008	Broadcast	Trial 2: No injury at 0.375, 0.75 and 1.5 lb ai per acre; no growth reduction.
27221	BroadStar 0.25G VC1604	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Abbotswood'	Field Container	Lieth	CA	2009	Broadcast	Slight phytotoxicity (approx 10 - 20% 30 DAT) from two applications at 0.375, 0.75, 1.5 lb aia and significant growth suppression (width and volume) suggests this product not safe for Potentilla.
27221	BroadStar 0.25G VC1604	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Goldfinger'	Field Container	Uber	CA	2008	Broadcast	No injury or significant growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27227	BroadStar 0.25G VC1604	Oak (Quercus sp.)	Field Container	Beste/Frank (ARS)	MD	2009	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27227	BroadStar 0.25G VC1604	Oak (Quercus sp.) Q. alba	Field Container	Freiberger	NJ	2008	Directed	Very slight injury at 0.375, 0.75 and 1.5 lb ai per acre.
27227	BroadStar 0.25G VC1604	Oak (Quercus sp.) Q. rubra	Field Container	Mathers (OSU)	OH	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27232	BroadStar 0.25G VC1604	Indian Hawthorn (Raphiolepis indica) R. umbellata 'Eleanor Taber'	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375 and 0.75, slight at 1.5 lb ai per acre.
27232	BroadStar 0.25G VC1604	Indian Hawthorn (Raphiolepis indica)	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre with two applications.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
27232	BroadStar 0.25G VC1604	Indian Hawthorn (<i>Rhaphiolepis indica</i>)	Field Container	Lieth	CA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; growth reduction data inconclusive.
27235	BroadStar 0.25G VC1604	Azalea & Rhododendron (<i>Rhododendron</i> sp.) <i>R. catawbiense</i> 'Chinoides'	Field Container	Ahrens/ Mervosh	CT	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre after 1st, slight after 2nd application.
27235	BroadStar 0.25G VC1604	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Fashion'	Field Container	Neal	NC	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27235	BroadStar 0.25G VC1604	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Fasticata'	Field Container	Senesac	NY	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27235	BroadStar 0.25G VC1604	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Midnight Flare'	Field Container	Trader	MS	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27235	BroadStar 0.25G VC1604	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Girard's Hot Shot'	Field Container	Wade	SC	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
28717	BroadStar 0.25G VC1604	Island Gooseberry (<i>Ribes viburnifolium</i>)	Field Container	Wilen	CA	2009	Broadcast	One application only. No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27238	BroadStar 0.25G VC1604	Rose (<i>Rosa</i> sp.) 'Raspberry Sunblaze'	Field Container	Boydston	WA	2008	Broadcast	No injury or growth and flower number reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27238	BroadStar 0.25G VC1604	Rose (<i>Rosa</i> sp.) 'Nearly Wild'	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27238	BroadStar 0.25G VC1604	Rose (<i>Rosa</i> sp.)	Field Container	Derr	VA	2008	Broadcast	No significant injury at 0.375, 0.75, and 1.5 lb ai per acre.
27238	BroadStar 0.25G VC1604	Rose (<i>Rosa</i> sp.) <i>R. woodsii</i>	Field Container	Harvey	WA	2008	Broadcast	1 application only; very slight injury at 0.375, moderate at 0.75 and 1.5 lb ai per acre.
27238	BroadStar 0.25G VC1604	Rose (<i>Rosa</i> sp.) 'Red Cascade'	Field Container	Wade	SC	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
29242	BroadStar 0.25G VC1604	Dwarf Palmetto (<i>Sabal minor</i>) Palmetto Palm	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27241	BroadStar 0.25G VC1604	Woodland Sage (<i>Salvia x sylvestris</i>) <i>S. nemorosa</i> 'East Friesland'	Field Container	Boydston	WA	2010	Broadcast	No injury or growth and flower number reduction at 0.375, 0.75 and 1.5 lb ai per acre; all treated plants saleable.
27241	BroadStar 0.25G VC1604	Woodland Sage (<i>Salvia x sylvestris</i>)	Field Container	Gilliam	AL	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27241	BroadStar 0.25G VC1604	Woodland Sage (<i>Salvia x sylvestris</i>) 'Blue Hill'	Field Container	Senesac	NY	2010	Broadcast	Slight to moderate injury with 0.375, 0.75, 1.5 lb ai per acre after 1st applic, almost complete recovery after 2nd applic.
27241	BroadStar 0.25G VC1604	Woodland Sage (<i>Salvia x sylvestris</i>) <i>S. 'May Night'</i>	Field Container	Williams	IL	2008	Broadcast	Virtually no injury at 0.375, 0.75 and 1.5 lb ai per acre; all rates reduced plant growth
28726	BroadStar 0.25G VC1604	Stonecrop (<i>Sedum</i> sp.) <i>S. ellacombianum</i>	Field Container	Boydston	WA	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants saleable.
28726	BroadStar 0.25G VC1604	Stonecrop (<i>Sedum</i> sp.) <i>S. reflexum</i> 'Blue Spruce'	Field Container	Boydston	WA	2010	Broadcast	Minor injury at 0.375, moderate at 0.75 and 1.5 lb ai per acre; all plants at 1X rate saleable.

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28726	BroadStar 0.25G VC1604	Stonecrop (Sedum sp.) S. spurium 'Red Carpet'	Field Container	Boydston	WA	2010	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants saleable.
28726	BroadStar 0.25G VC1604	Stonecrop (Sedum sp.) S. stefco	Field Container	Boydston	WA	2010	Broadcast	Minor to high injury increasing with rates (0.375, 0.75 and 1.5 lb ai per acre); plants treated with 2X and 4X rates not saleable.
28726	BroadStar 0.25G VC1604	Stonecrop (Sedum sp.)	Field Container	Derr	VA	2010	Broadcast	Three to five percent crop injury (tip burn) which decreased over time (32 and 46 DAT and 3 DAT2. Weed control (chamberbitter, tassleflower, S. crabgrass, annual sedge) increased with increasing rates.
28726	BroadStar 0.25G VC1604	Stonecrop (Sedum sp.) S. spurium 'John Creech'	Field Container	Senesac	NY	2010	Broadcast	Moderate crop injury with two application at 0.375, 0.75, 1.5 lb ai per acre.
28726	BroadStar 0.25G VC1604	Stonecrop (Sedum sp.) S. x spectabile 'Autumn Joy'	Field Container	Williams	IL	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27245	BroadStar 0.25G VC1604	Bridal-Wreath (Spiraea sp.) S. japonica 'Magic Carpet'	Field Container	Ahrens/ Mervosh	CT	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre after 1st, very slight after 2nd application.
27245	BroadStar 0.25G VC1604	Bridal-Wreath (Spiraea sp.) S. cantoniensis	Field Container	Gilliam	AL	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre with two applications.
27245	BroadStar 0.25G VC1604	Bridal-Wreath (Spiraea sp.) S. thunbergii	Field Container	Mickelbart	IN	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with single application 3 weeks after transplanting.
27245	BroadStar 0.25G VC1604	Bridal-Wreath (Spiraea sp.) S. japonica 'Dolchica'	Field Container	Trader	MS	2008	Broadcast	Moderate to high injury at 0.375, 0.75 and 1.5 lb ai per acre.
34941	BroadStar 0.25G VC1604	Prairie Dropseed (Sporobolus heterolepis)	Field Container	Cochran	MD	2023	Broadcast	No injury or impact on growth with 0.375, 0.75, and 1.5 lb ai per acre.
34941	BroadStar 0.25G VC1604	Prairie Dropseed (Sporobolus heterolepis)	Field Container	Derr	VA	2022	Broadcast	No to very slight injury with 100 and 200 lb product per acre and slight with 400 lb per acre.
34941	BroadStar 0.25G VC1604	Prairie Dropseed (Sporobolus heterolepis)	Field Container	Reding	OH	2022	Broadcast	Slight chlorosis increasing with rate (150, 300, 600 lb per acre) and generally no impact on plant growth or flowering, but the 1x rate caused stunting.
27282	BroadStar 0.25G VC1604	Camellia, Mountain (Stewartia sp.) S. pseudocamelia	Field Container	Senesac	NY	2011	Broadcast	No crop injury with two applications at 0.38, 0.75, 1.5 lb ai per acre.
27250	BroadStar 0.25G VC1604	Lilac (Syringa sp.) S. microphylla 'Superba'	Field Container	Beste/Frank (ARS)	MD	2008	Broadcast	No significant injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27250	BroadStar 0.25G VC1604	Lilac (Syringa sp.) S. patula 'Miss Kim'	Field Container	Harvey	WA	2008	Broadcast	1 application only; no injury at 0.375 and 0.75, very slight at 1.5 lb ai per acre.
27250	BroadStar 0.25G VC1604	Lilac (Syringa sp.) S. reticulata 'Ivory Silk'	Field Container	Mathers (OSU)	OH	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27250	BroadStar 0.25G VC1604	Lilac (Syringa sp.) S. patula 'Miss Kim'	Field Container	Williams	IL	2008	Broadcast	Virtually no injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27253	BroadStar 0.25G VC1604	Yew (Taxus sp.) T. x media 'Runyun'	Field Container	Mathers (OSU)	OH	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
27253	BroadStar 0.25G VC1604	Yew (<i>Taxus</i> sp.) <i>T. baccata</i>	Field Container	Senesac	NY	2008	Broadcast	No significant injury at 0.375, slight at 0.75 and 1.5 lb ai per acre; no growth reduction.
27253	BroadStar 0.25G VC1604	Yew (<i>Taxus</i> sp.) <i>T. x media</i> 'Densiformis'	Field Container	Williams	IL	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27258	BroadStar 0.25G VC1604	Ternstroemia (<i>Ternstroemia</i> sp.) 'Leann'	Field Container	Gilliam	AL	2009	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
28721	BroadStar 0.25G VC1604	Wall Germander (<i>Teucrium chamaedrys</i>)	Field Container	Wilén	CA	2009	Broadcast	One application only. Very slight injury at 0.375, 0.75 and 1.5 lb ai per acre; root and shoot dry weights not significantly reduced.
27261	BroadStar 0.25G VC1604	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Emerald Green'	Field Container	Ahrens/Mervosh	CT	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre after 1st, very slight after 2nd application.
27261	BroadStar 0.25G VC1604	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Degroot's Spire'	Field Container	Boydston	WA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27261	BroadStar 0.25G VC1604	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. plicata</i> 'Green Giant'	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27261	BroadStar 0.25G VC1604	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Smaragd'	Field Container	Harvey	WA	2008	Broadcast	Single application only; no injury at 0.375 and 0.75, slight transient injury at 1.5 lb ai per acre.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) 'Northern Burgundy'	Field Container	Boydston	WA	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; all plants marketable.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) <i>V. plicatum tomentosum</i> 'Shasta'	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) <i>V. tinus</i>	Field Container	Czarnota	GA	2008	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) <i>V. x</i> 'Juddi'	Field Container	Mickelbart	IN	2008	Broadcast	No injury at 0.375, 0.75, and 1.5 lb ai per acre with single application 3 weeks after transplanting.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) <i>V. tinus</i> 'Compactum'	Field Container	Neal	NC	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre.
27270	BroadStar 0.25G VC1604	Arrowwood (<i>Viburnum</i> sp.) <i>V. x burkwoodii</i>	Field Container	Senesac	NY	2008	Broadcast	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
27287	BroadStar 0.25G VC1604	Japanese Zelkova (<i>Zelkova serrata</i>)	Field Container	Beste/Frank (ARS)	MD	2011	Broadcast	No injury or growth reduction with 0.375, 0.75 and 1.5 lb ai per acre applied twice; no effect on marketability.
27287	BroadStar 0.25G VC1604	Japanese Zelkova (<i>Zelkova serrata</i>)	Field Container	Freiberger	NJ	2009	Broadcast	No injury at 0.375, 0.75 and 1.5 lb ai per acre applied once at 2nd applic timing.

Table 23. Detailed Summary of Crop Safety Testing with SureGuard 51WDG (flumioxazin)

Note: Table entries are sorted by crop Latin name. Only those trials with research reports received by 2/19/2024 are listed below.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
23948	SureGuard 51WDG	Fir, Balsam (<i>Abies balsamea</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.34 or 0.68 lb ai per acre; no control of established fleabane (<i>Erigeron</i> spp.) and cheat (<i>Bromus secalinus</i>).
23948	SureGuard 51WDG	Fir, Balsam (<i>Abies balsamea</i>) A. balsamea var. phanerolepsis	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.34 or 0.68 lb ai per acre; no control of established fleabane (<i>Erigeron</i> spp.) and cheat (<i>Bromus secalinus</i>).
23948	SureGuard 51WDG	Fir, Balsam (<i>Abies balsamea</i>) A. balsamea var. phanerolepsis	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No specific injury at 0.17, 0.34 or 0.68 lb ai per acre, some mortality but not related to treatment; 70 - 80 % control of weeds in transplant beds.
23651	SureGuard 51WDG	Fir, Balsam (<i>Abies balsamea</i>)	Field Container	Altland	OR	2003	Over the top	Plants were of poor quality, however applications on actively growing plant material did cause minor to moderate injury at all rates (0.25, 0.5, 1.0 lb ai per acre).
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2000	Over the top	Moderate to severe injury on actively growing foliage; little impact on emerged common ragweed and horseweed, but effective pre-emergent control of large crabgrass.
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	VT	2000	Over the top	Applications prior to bud break caused no injury, but applications after budbreak caused severe phytotoxicity on new growth with no injury to mature foliage; suppression but poor control of perennial grasses.
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.25 or 0.5 lb ai per acre; excellent control of asiatic dayflower (<i>commelina communis</i>).
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.25, 0.34 or 0.68 lb ai per acre when applied the second year on the same plants; good red sorrel and smooth bedstraw control in July but not in September.
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.25, 0.375, and 0.68 lb ai per acre; excellent control of crabgrass and ragweed, fair control of horseweed.
20428	SureGuard 51WDG	Fir, Fraser (<i>Abies fraseri</i>)	Field In-Ground	Ahrens/ Mervosh	CT	2001	Over the top	No injury at 0.34 or 0.68 lb ai per acre; no control of established fleabane (<i>Erigeron</i> spp.) and cheat (<i>Bromus secalinus</i>).
23650	SureGuard 51WDG	Grand Fir, Giant Fir (<i>Abies grandis</i>)	Field Container	Altland	OR	2003	Over the top	Poor quality plants, however applications in the middle of the season did contribute to poorer quality than untreated (0.25, 0.5, and 1.0 lb ai per acre).

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
23654	SureGuard 51WDG	Alpine Fir, Subalpine Fir (<i>Abies lasiocarpa</i>) 'Arizonica'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20418	SureGuard 51WDG	Fir (<i>Abies</i> sp.) A. bornmuelleriana	Field Container	Altland	OR	2003	Over the top	No injury after single application (0.25, 0.5, and 1.0 lb ai per acre), but after the second application injury was slight and sporadic.
20418	SureGuard 51WDG	Fir (<i>Abies</i> sp.) A. procera	Field Container	Altland	OR	2003	Over the top	Poor quality plants led to confounding results for dormant applications, but there was clear evidence of moderate injury increasing with rate (0.25, 0.5, and 1.0 lb ai per acre) for applications onto actively growing plants.
25324	SureGuard 51WDG	Maple, Red (<i>Acer rubrum</i>)	Field Container	Altland	OR	2006	Over the top	Moderate transient injury (bud blackening), no growth reduction at all rates (0.25, 0.5, 1.0 lb ai per acre).
25324	SureGuard 51WDG	Maple, Red (<i>Acer rubrum</i>)	Field Container	Senesac	NY	2006	Over the top	No injury at 0.375, 0.75, and 1.5 lb ai per acre.
20429	SureGuard 51WDG	Maple (<i>Acer</i> sp.) A. rubrum	Field In-Ground	Hart	NJ	2001	Directed	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
20429	SureGuard 51WDG	Maple (<i>Acer</i> sp.) A. rubrum	Field In-Ground	Kuhns	PA	2003	Directed	No injury at 0.25, 0.5 or 1.0 lb ai per acre; excellent control at all rates.
20484	SureGuard 51WDG	Yarrow, Common (<i>Achillea millefolium</i>) 'Moonshine'	Field Container	Boydston	WA	2003	Over the top	Slight delay of regrowth, but by 10 WAT no visible difference between untreated at all rates (0.25, 0.5, and 1.0 lb ai per acre).
30143	SureGuard 51WDG	Japanese Barberry (<i>Berberis thunbergii</i>) 'Rosie Glow'	Greenhouse	Altland	OR	2002	Over the top	Significant damage some mortality with all rates (0.25, 0.5, 1.0 lb ai per acre) applied at bud break, but after the second application on mature foliage only the high rate caused damage.
30143	SureGuard 51WDG	Japanese Barberry (<i>Berberis thunbergii</i>) 'Rosy Glow'	Greenhouse	Derr	VA	2002	Over the top	Slight to significant injury increasing with rate (0.25, 0.5 and 1.0 lb ai per acre); excellent control of spotted spurge and large crabgrass.
30143	SureGuard 51WDG	Japanese Barberry (<i>Berberis thunbergii</i>) 'Crimson Pygmy'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Lincoln: Severe (68%) crop injury compared to untreated with 12 oz/A + 0.25% NIS.
30143	SureGuard 51WDG	Japanese Barberry (<i>Berberis thunbergii</i>) 'Orange Rocket'	Greenhouse	Mathers (OSU)	OH	2013	Over the top	Decker: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth.
20440	SureGuard 51WDG	Birch, River (<i>Betula nigra</i>) 'Heritage' and 'Duratree'	Field In-Ground	Kuhns	PA	2003	Directed	No visible injury with directed spray for any rate (0.25, 0.5 and 1.0 lb ai per acre); some control of a number of weeds except common ragweed and giant foxtail.
20432	SureGuard 51WDG	Butterfly Bush (<i>Buddleia davidii</i>) 'Lochinich'	Field In-Ground	Anderson	OH	2002	Directed	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
30142	SureGuard 51WDG	Boxwood, Littleleaf (<i>Buxus microphylla</i>) B. microphylla 'Green velvet'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Unacceptable crop injury with 12 oz/A + 0.25% NIS.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
30142	SureGuard 51WDG	Boxwood, Littleleaf (<i>Buxus microphylla</i>) 'Wintergem'	Greenhouse	Mathers (OSU)	OH	2013	Over the top	Decker: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth.
20495	SureGuard 51WDG	Boxwood (<i>Buxus</i> sp.) B. <i>microphylla</i> var. <i>japonica</i>	Field Container	Derr	VA	2002	Over the top	Slight to moderate injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre); excellent control of spotted spurge and large crabgrass.
20495	SureGuard 51WDG	Boxwood (<i>Buxus</i> sp.) B. <i>microphylla japonica</i>	Field Container	Fraelich	GA	2001	Over the top	Very slight injury only observed with 0.68 lb ai per acre, but these plants and the ones treated with 0.17 and 0.34 lb ai per acre were fully marketable.
19905	SureGuard 51WDG	Sedge (<i>Carex</i> sp.) <i>C. buchananii</i>	Field Container	Boydston	WA	2003	Over the top	No data available due to winter kill of all plants including untreated; excellent control of moss, pigweed, kochia, and bittercress, but no control of green foxtail and liverwort.
23646	SureGuard 51WDG	Deodar Cedar (<i>Cedrus deodara</i>)	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
19496	SureGuard 51WDG	Sand Heath, Florida Rosemary (<i>Ceratiola ericoides</i>)	Field Container	Anderson	OH	2002	Directed	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
23641	SureGuard 51WDG	Hinoki False Cypress (<i>Chamaecyparis obtusa</i>) <i>C. pisifera</i> 'Fifilera Aurea'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
23641	SureGuard 51WDG	Hinoki False Cypress (<i>Chamaecyparis obtusa</i>) 'Templehof'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20502	SureGuard 51WDG	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>) 'Ruby Spice'	Field Container	Beste/Frank (ARS)	MD	2005	Over the top	No injury at 0.25 lb ai per acre, significant injury at 0.5 and 1.0 lb ai per acre but plants recovered
20552	SureGuard 51WDG	Sweet Pepperbush, Summersweet (<i>Clethra alnifolia</i>)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Over the top	No significant injury at 0.25, 0.5 and 1.0 lb ai per acre.
20503	SureGuard 51WDG	Sakaki, <i>Cleyera</i> (<i>Cleyera japonica</i>)	Field Container	Gilliam	AL	2001	Over the top	Moderate, but transient, injury at all rates (0.17, 0.34 and 0.68 lb ai per acre); excellent weed control.
19876	SureGuard 51WDG	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i> 'Rosea'	Field Container	Ahrens/Mervosh	CT	2003	Over the top	Significant unacceptable injury at 0.25, 0.5 and 1.0 lb ai per acre; excellent control of large crabgrass and common groundsel.
20389	SureGuard 51WDG	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i>	Field In-Ground	Beste/Frank (ARS)	MD	2005	Directed	No significant injury after the first application (0.25, 0.5, 1.0 lb ai per acre) with slight transient injury after the second; great to excellent weed control (see report for detailed list of weed species).
19876	SureGuard 51WDG	Pampas Grass (<i>Cortaderia</i> sp.) <i>C. selloana</i> 'Hoffman No. 5'	Field Container	Beste/Frank (ARS)	MD	2005	Over the top	Moderate to significant injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre) with plants recovering over time due to sloughing off of older leaves, but plants at the highest rate did exhibit reduced growth.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
20505	SureGuard 51WDG	Smoke Tree, European (<i>Cotinus coggygria</i>)	Field Container	Anderson	OH	2002	Directed	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
20506	SureGuard 51WDG	Cotoneaster (<i>Cotoneaster</i> sp.) <i>C. dameri</i> 'Skoigshomen'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	Moderate to significant phytotoxicity increasing with rate (0.375, 0.75, 1.5 lb ai per acre), and stunting was also observed.
20509	SureGuard 51WDG	Pride-of-Rochester (<i>Deutzia</i> sp.) 'Nikko'	Field Container	Anderson	OH	2002	Directed	Significant necrosis with all rates (0.25, 0.5, 1.0 lb ai per acre).
25327	SureGuard 51WDG	Purple Coneflower (<i>Echinacea</i> sp.)	Field Container	Boydston	WA	2006	Over the top	5 of 24 plants survived winter due to severe cold; surviving 1X and 4X treated plants indicated crop safety.
30146	SureGuard 51WDG	Burning Bush (<i>Euonymus alatus</i>) E. 'White album'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Zelenka: Moderate but significantly different crop injury with 12 oz/A + 0.255 NIS. Plants unable to recover.
30146	SureGuard 51WDG	Burning Bush (<i>Euonymus alatus</i>) 'Unforgettable Fire'	Greenhouse	Mathers (OSU)	MI	2012	Over the top	Data not reliable because of high injury to untreated check; excellent liverwort control.
20580	SureGuard 51WDG	Burning Bush (<i>Euonymus alatus</i>) 'Compactus'	Field Container	Senesac	NY	2006	Over the top	No injury at 0.375 and 0.75 lb ai per acre, slight at 1.5 lb ai per acre.
19877	SureGuard 51WDG	Field Fescue (<i>Festuca glauca</i>) 'Elijah Blue'	Field Container	Ahrens/Mervosh	CT	2003	Over the top	No injury at 0.25 lb ai per acre and very slight injury at 0.5 and 1.0 lb ai per acre; excellent control of large crabgrass and common groundsel.
19877	SureGuard 51WDG	Field Fescue (<i>Festuca glauca</i>)	Field Container	Boydston	WA	2003	Over the top	No injury at 0.25, 0.5 and 1.0 lb ai per acre; excellent control of kochia, but little impact on annual grasses.
20514	SureGuard 51WDG	Forsythia (<i>Forsythia</i> sp.) 'Show Off Sugar Baby'	Field Container	Mathers (OSU)	MI	2013	Over the top	Spring Meadows: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth; excellent liverwort control.
26667	SureGuard 51WDG	Ash (<i>Fraxinus</i> sp.) <i>F. pennsylvanica</i>	Field In-Ground	Hitcher	NJ	2001	Over the top	No injury at 0.17, 0.34 or 0.68 lb ai per acre.
20058	SureGuard 51WDG	Ivy, English (<i>Hedera helix</i>)	Field Container	Boydston	WA	2006	Over the top	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; plants did not survive severe winter.
25332	SureGuard 51WDG	Hellebore, Black (<i>Helleborus niger</i>) 'Pink Lady'	Field Container	Boydston	WA	2006	Over the top	Moderate to high injury (necrotic spots on green leaves) at 0.375, 0.75 and 1.5 lb ai per acre; most plants did not survive severe winter.
25332	SureGuard 51WDG	Hellebore, Black (<i>Helleborus niger</i>) <i>H. orientalis</i>	Field Container	Senesac	NY	2006	Over the top	Unacceptable injury at all rates (0.375, 0.75, 1.5 lb ai per acre).
19911	SureGuard 51WDG	Daylily (<i>Hemerocallis</i> sp.)	Field Container	Fraelich	GA	2001	Over the top	No injury at 0.17 lb ai per acre, but slight injury and stunting was observed with 0.34 and 0.68 lb ai per acre.
19911	SureGuard 51WDG	Daylily (<i>Hemerocallis</i> sp.)	Field Container	Gilliam	AL	2001	Over the top	Moderate to severe transient increasing with rate (0.17, 0.34, 0.68 lb ai per acre), with no impact on growth at the end of the experiment; excellent spurge control.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
19911	SureGuard 51WDG	Daylily (<i>Hemerocallis</i> sp.) 'Stella d'Oro'	Field Container	Neal	NC	2001	Over the top	Moderate injury at 0.34 lb ai per acre.
30810	SureGuard 51WDG	Rosemallow (<i>Hibiscus</i> sp.) 'Blue Satin'	Field Container	Mathers (OSU)	MI	2013	Over the top	Spring Meadows: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth; excellent liverwort control.
19921	SureGuard 51WDG	Plantain Lily (<i>Hosta</i> sp.)	Field Container	Boydston	WA	2003	Over the top	No injury at 0.25, 0.5 and 1.0 lb ai per acre; excellent control of bittercress, common chickweed, barnyard grass, and kochia.
30916	SureGuard 51WDG	Plantain Lily (<i>Hosta</i> sp.) 'Blue Hawaii'	Greenhouse	Derr	VA	2013	Over the top	Unacceptable injury with 4 and 12 oz per acre w/ or w/o irrigation.
20579	SureGuard 51WDG	Bigleaf Hydrangea (<i>Hydrangea macrophylla</i>) 'Nikko Blue'	Field Container	Lieth	CA	2006	Over the top	Severe injury at 0.375, 0.75 and 1.5 lb ai per acre.
20579	SureGuard 51WDG	Bigleaf Hydrangea (<i>Hydrangea macrophylla</i>) <i>H. quercifolia</i> 'Alice'	Field Container	Senesac	NY	2006	Over the top	Slight injury at 0.375 lb ai per acre and unacceptable at 0.75 and 1.5 lb ai per acre.
30141	SureGuard 51WDG	Hydrangea (<i>Hydrangea</i> sp.) <i>H. 'Invincibelle amourenses'</i>	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Spring Meadow: Severe crop injury observed from 4 WAT (94%) through 4 WAT2 (88%) with 12 oz/A + 0.25% NIS. No ratings taken first two weeks due to dormancy.
30141	SureGuard 51WDG	Hydrangea (<i>Hydrangea</i> sp.) 'Invicibelle Spirit'	Greenhouse	Mathers (OSU)	MI	2012	Over the top	Severe injury with 4 oz per acre applied twice; excellent liverwort control.
30141	SureGuard 51WDG	Hydrangea (<i>Hydrangea</i> sp.) <i>H. paniculata</i> 'Limelight'	Greenhouse	Mathers (OSU)	OH	2013	Over the top	Spring Meadows: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth; excellent liverwort control.
20351	SureGuard 51WDG	Candytuft (<i>Iberis</i> sp.) 'Alexander's White'	Field Container	Boydston	WA	2003	Over the top	No visible injury, but single application decreased plant growth and number of flowers at all rates (0.25, 0.5, 1.0 lb ai per acre); treated plants not saleable; excellent pre-emergent control of common lambsquarter and kochia but little control of barnya
20518	SureGuard 51WDG	Holly, Japanese (<i>Ilex crenata</i>) <i>I. crenata compacta</i>	Field Container	Derr	VA	2002	Over the top	Slight but transient injury increasing with rate (0.25, 0.5 and 1.0 lb ai per acre); excellent control of spotted spurge and large crabgrass.
20518	SureGuard 51WDG	Holly, Japanese (<i>Ilex crenata</i>) <i>I. crenata compacta</i>	Field Container	Gilliam	AL	2001	Over the top	Significant injury at all rates (0.17, 0.34, 0.68 lb ai per acre) exhibited by leaf drop and discoloration; excellent weed control.
20566	SureGuard 51WDG	Holly (<i>Ilex</i> sp.) <i>I. x meserveae</i> 'Blue Girl' 'Blue Boy'	Field In-Ground	Ahrens/ Mervosh	CT	2000	Over the top	Unacceptable injury at 0.17 and 0.34 lb ai per acre; excellent control of common chickweed, annual bluegrass, and knawel.
30917	SureGuard 51WDG	Yaupon (<i>Ilex vomitoria</i>) <i>I. verticillata</i> 'Winter Red'	Field Container	Mathers (OSU)	MI	2012	Over the top	Severe injury with 4 oz per acre applied twice; excellent liverwort control.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
36006	SureGuard 51WDG	Holly, Blue (Ilex x meserveae) 'Blue Prince'	Field Container	Altland	OR	2002	Over the top	Significant injury at all rates (0.25, 0.5, 1.0 lb ai per acre) with applications prior to bud break and onto mature foliage.
36006	SureGuard 51WDG	Holly, Blue (Ilex x meserveae) 'Blue Princess'	Field Container	Altland	OR	2006	Over the top	Minor injury at all rates (0.375, 0.5, 1.5 lb ai per acre); however, foliage exhibited significant purpling and bronzing and less new growth occurred in the spring.
30144	SureGuard 51WDG	Holly, Blue (Ilex x meserveae) 'China Girl'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Linclon: Unacceptable crop injury compared to untreated with 12 oz/a + 0.25% NIS.
36007	SureGuard 51WDG	Juniper, Creeping or Trailing (Juniperus horizontalis) J. horizontalis 'Bar Harbor'	Field Container	Ahrens/ Mervosh	CT	2000	Over the top	No injury with 0.17 and 0.34 lb ai per acre; excellent weed control.
36007	SureGuard 51WDG	Juniper, Creeping or Trailing (Juniperus horizontalis) J. horizontalis 'Bar Harbor'	Field Container	Ahrens/ Mervosh	CT	2001	Over the top	No injury with 0.17 and 0.34 lb ai per acre; good weed control.
30148	SureGuard 51WDG	Juniper, Creeping or Trailing (Juniperus horizontalis) J. horizontalis 'Hughes Gold'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Zelenka: Initial crop injury (20%) 1 WAT but plants recovered with no injury observed in later evaluations from 12 oz/A + 0.25% NIS.
20413	SureGuard 51WDG	Juniper (Juniperus sp.) J. communis 'Effusa'	Field Container	Altland	OR	2002	Over the top	No injury with 0.25, 0.5 or 1.0 lb ai per acre.
36008	SureGuard 51WDG	Juniper, Flaky (Juniperus squamata) J. squamata 'Blue Star'	Field Container	Ahrens/ Mervosh	CT	2000	Over the top	No injury with 0.17 and 0.34 lb ai per acre; excellent weed control.
36008	SureGuard 51WDG	Juniper, Flaky (Juniperus squamata) J. squamata 'Blue Star'	Field Container	Ahrens/ Mervosh	CT	2001	Over the top	No injury with 0.17 and 0.34 lb ai per acre; good weed control.
36008	SureGuard 51WDG	Juniper, Flaky (Juniperus squamata) J. squamata 'Blue Star'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20452	SureGuard 51WDG	Cedar, Eastern Red (Juniperus virginiana) 'Emerald Sentinel'	Field In-Ground	Hart	NJ	2003	Directed	No injury with dormant applications, but minor transient tip burn was observed at all rates (0.25, 0.5 and 1.0 lb ai per acre) after second application to new growth.
20434	SureGuard 51WDG	Crape Myrtle (Lagerstroemia indica) 'Tuscarora'	Field Container	Gilliam	AL	2001	Over the top	Moderate to significant injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre); excellent weed control.
25328	SureGuard 51WDG	Lily, Easter; Trumpet Lily (Lilium longiflorum) 'Nellie White'	Field Container	Lieth	CA	2006	Over the top	No injury or growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
20433	SureGuard 51WDG	Lilyturf, Big Blue (Liriope muscari) 'Blue Boy'	Field Container	Beste/Frank (ARS)	MD	2005	Over the top	Extensive injury increasing with rate (0.025, 0.5, 1.0 lb ai per acre).
20356	SureGuard 51WDG	Lilyturf, Big Blue (Liriope muscari) L. spicata 'Big Blue'	Field Container	Gilliam	AL	2001	Over the top	Minor to moderate, transient injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre); excellent weed control.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
20357	SureGuard 51WDG	Liriope, Creeping (<i>Liriope spicata</i>) <i>L. spicata</i>	Field Container	Beste/Frank (ARS)	MD	2005	Over the top	Extensive injury and some stunting at all rates (0.25, 0.5, 1.0 lb ai per acre).
20569	SureGuard 51WDG	Sacred Bamboo (<i>Nandina domestica</i>) 'Fire Power'	Field In-Ground	Beste/Frank (ARS)	MD	2005	Directed	No significant injury (0.25, 0.5, 1.0 lb ai per acre).
20522	SureGuard 51WDG	Sacred Bamboo (<i>Nandina domestica</i>)	Field Container	Beste/Frank (ARS)	MD	2005	Over the top	Significant phyto but plants recovered and were marketable at all rates (0.25, 0.5, 1.0 lb ai per acre).
31879	SureGuard 51WDG	Fern, Royal (<i>Osmunda regalis</i>)	Greenhouse	Derr	VA	2013	Over the top	Low injury but poor liverwort control with 4 oz per acre w/ irrigation; unacceptable injury at 4 oz w/o, or 12 oz w/ or w/o, irrig.
20406	SureGuard 51WDG	Crimson Fountain Grass (<i>Pennisetum setaceum</i>) 'Tall Tails'	Field In-Ground	Beste/Frank (ARS)	MD	2005	Directed	Significant, transient injury but plants marketable at 0.25 and 0.5 lb ai per acre
20363	SureGuard 51WDG	Crimson Fountain Grass (<i>Pennisetum setaceum</i>) 'Hamelin'	Field Container	Boydston	WA	2003	Over the top	Moderate to significant injury increasing with rate (0.25, 0.5 and 1.0 lb ai per acre); excellent control of common chickweed, kochia and barnyardgrass.
20364	SureGuard 51WDG	Reed Canarygrass (<i>Phalaris arundinacea</i>) 'Feesey's Form'	Field Container	Anderson	OH	2002	Directed	Moderate to severe chlorosis and necrosis increasing with rate (0.25, 0.5, and 1.0 lb ai per acre).
20416	SureGuard 51WDG	Spruce (<i>Picea</i> sp.) <i>P. abies</i> 'Nidiformis'	Field Container	Altland	OR	2003	Over the top	Young and actively growing plants are susceptible to damage at all rates (0.25, 0.5, 1.0 lb ai per acre).
20416	SureGuard 51WDG	Spruce (<i>Picea</i> sp.) <i>P. glauca</i>	Field Container	Altland	OR	2003	Over the top	Young and actively growing plants are susceptible to damage at all rates (0.25, 0.5, 1.0 lb ai per acre).
20526	SureGuard 51WDG	Andromeda, Fetterbush (<i>Pieris</i> sp.) <i>P. japonica</i> 'Valley Valentine'	Field Container	Altland	OR	2002	Over the top	Slight to severe injury including mortality increasing with rate after single application (0.25, 0.5, 1.0 lb ai per acre).
20571	SureGuard 51WDG	Andromeda, Fetterbush (<i>Pieris</i> sp.)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Directed	No significant injury (0.25, 0.5, 1.0 lb ai per acre).
20527	SureGuard 51WDG	Pine, Mugo (<i>Pinus mugo</i>) 'pumilo'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
23643	SureGuard 51WDG	Pine, Austrian (<i>Pinus nigra</i>)	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20462	SureGuard 51WDG	Pine, Austrian (<i>Pinus nigra</i>)	Field In-Ground	Beste/Frank (ARS)	MD	2005	Directed	Virtually no injury at all rates (0.25, 0.5, 1.0 lb ai per acre).
20417	SureGuard 51WDG	Pine (<i>Pinus</i> sp.) <i>P. eliottii</i>	Field Container	Fraelich	GA	2001	Over the top	No injury at 0.17, 0.34 and 0.68 lb ai per acre.
23653	SureGuard 51WDG	Pine, Japanese Black (<i>Pinus thunbergiana</i>)	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20529	SureGuard 51WDG	Leadwort, Cape (<i>Plumbago auriculata</i>) <i>Cerastostigma plumbaginoides</i>	Field Container	Senesac	NY	2006	Over the top	No data due to limited plant survival.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
20532	SureGuard 51WDG	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Gold Finger'	Field Container	Ahrens/Mervosh	CT	2000	Over the top	Moderate injury with 0.17 and 0.34 lb ai per acre after single application with less injury exhibited after second application; excellent weed control.
20532	SureGuard 51WDG	Cinquefoil; Potentilla (Potentilla sp.) P. fruticosa 'Gold Finger'	Field Container	Ahrens/Mervosh	CT	2001	Over the top	Significant unacceptable injury with 0.17 and 0.34 lb ai per acre applied to actively growing cinquifoil.
23649	SureGuard 51WDG	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Altland	OR	2003	Over the top	Plants were of poor quality; no conclusions can be made from this trial.
25461	SureGuard 51WDG	Oak, Red (Quercus rubra)	Field Container	Altland	OR	2006	Over the top	No injury or growth reduction at any rate (0.375, 0.75, 1.5 lb ai per acre).
20475	SureGuard 51WDG	Oak, Red (Quercus rubra)	Field In-Ground	Beste/Frank (ARS)	MD	2006	Over the top	Unacceptable injury and growth reduction at 0.375, 0.75 and 1.5 lb ai per acre.
20475	SureGuard 51WDG	Oak, Red (Quercus rubra)	Field In-Ground	Hitcher	NJ	2001	Over the top	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
33127	SureGuard 51WDG	Oak (Quercus sp.) Q. palustris	Seedbed	Beste	MD	2016	Over the top	No injury or growth reduction with 1.5 oz per acre applied broadcast PRE 10 days after seeding; excellent weed control.
33127	SureGuard 51WDG	Oak (Quercus sp.) Q. phellos	Seedbed	Beste	MD	2016	Over the top	No injury or growth reduction with 1.5 oz per acre applied broadcast PRE 10 days after seeding; excellent weed control.
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) 'Delaware Valley White'	Field Container	Ahrens/Mervosh	CT	2000	Over the top	Unacceptable injury to actively grower azalea with 0.17 and 0.34 lb ai per acre; excellent weed control.
19490	SureGuard 51WDG	Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field Container	Ahrens/Mervosh	CT	2000	Over the top	Significant unacceptable injury with 0.17 and 0.34 lb ai per acre; excellent weed control.
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) 'Delaware Valley White'	Field Container	Ahrens/Mervosh	CT	2001	Over the top	Unacceptable injury to actively growing azalea eith 0.17 and 0.34 lb ai per acre; good weed control.
19490	SureGuard 51WDG	Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field Container	Ahrens/Mervosh	CT	2001	Over the top	Significant unacceptable injury with both rates (0.17 and 0.34 lb ai per acre) with over the top applications on actively growing Rhododendrons.
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) 'Stewartsonia'	Field Container	Altland	OR	2002	Over the top	Moderate to severe injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre).
19490	SureGuard 51WDG	Rhododendron (Rhododendron sp.) 'Blue Peter'	Field Container	Altland	OR	2002	Over the top	Significant unacceptable injury at all rates (0.25, 0.5, and 1.0 lb ai per acre).
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) 'Elsie Lee'	Field Container	Anderson	OH	2002	Directed	No injury at 0.25, 0.5 or 1.0 lb ai per acre.
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) 'Formosa'	Field Container	Derr	VA	2002	Over the top	Severe injury at all rates with complete mortality at 1.0 lb ai per acre; excellent control of spotted spurge and large crabgrass.
19461	SureGuard 51WDG	Azalea (Rhododendron sp.) R. eriocarpum 'Gumpo Pink'	Field Container	Gilliam	AL	2001	Over the top	Minor to moderate transient injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre); excellent weed control.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
25326	SureGuard 51WDG	Rose (Rosa sp.) 'Nearly Wild'	Field Container	Lieth	CA	2006	Over the top	Moderate injury and growth reduction at all rates.
25326	SureGuard 51WDG	Rose (Rosa sp.) 'Oranges & Lemons'	Field Container	Mathers (OSU)	OH	2006	Over the top	Significant severe damage increasing with rate (0.375, 0.75, 1.5 lb ai per acre).
25326	SureGuard 51WDG	Rose (Rosa sp.) R. virginiana	Field Container	Senesac	NY	2006	Over the top	Very slight injury with complete recovery.
25335	SureGuard 51WDG	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa)	Field Container	Boydston	WA	2006	Over the top	No injury 9 days posttreatment at 0.375, 0.75 and 1.5 lb ai per acre; plants did not survive severe winter.
25335	SureGuard 51WDG	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa) 'Viettas Little Suzie'	Field Container	Mathers (OSU)	OH	2006	Over the top	Significant injury increasing with rate (0.375, 0.75, 1.5 lb ai per acre) with mortality occurring in all treatments by 4 weeks after the second treatment.
25335	SureGuard 51WDG	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa) 'Goldstrum'	Field Container	Senesac	NY	2006	Over the top	Slight injury increasing with rate (0.375, 0.75, 1.5 lb ai per acre), but plants were marketable.
20366	SureGuard 51WDG	Woodland Sage (Salvia x sylvestris)	Field Container	Gilliam	AL	2001	Over the top	Mortality occurred with all rates (0.17, 0.34, and 0.68 lb ai per acre); excellent weed control.
23655	SureGuard 51WDG	Giant Sequoia; Redwood (Sequoiadendron giganteum)	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre with a single application, but the second application during active growth did cause slight and sporadic injury.
19337	SureGuard 51WDG	Bridal-Wreath (Spiraea sp.) S. nipponica 'Snowmound'	Field Container	Ahrens/ Mervosh	CT	2000	Over the top	Moderate injury with over the top applications of 0.17 and 0.34 lb ai per acre.
19337	SureGuard 51WDG	Bridal-Wreath (Spiraea sp.) S. nipponica 'Snowmound'	Field Container	Ahrens/ Mervosh	CT	2001	Over the top	Moderate injury with over the top applications of 0.17 and 0.34 lb ai per acre on second year application of same plants; good weed control.
19337	SureGuard 51WDG	Bridal-Wreath (Spiraea sp.) S. x vanhouttei	Field Container	Altland	OR	2002	Over the top	Slight to moderate injury increasing with rate (0.25, 0.5, 1.0 lb ai per acre).
30140	SureGuard 51WDG	Lilac (Syringa sp.) S. meyeri 'Paliban'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Spring Meadow: Moderate (41-60%) crop injury with 12 oz/A + 0.25% NIS. Many plants in experiment including controls had unacceptable injury not related to treatments. No ratings taken first two weeks due to dormancy.
30140	SureGuard 51WDG	Lilac (Syringa sp.) 'Miss Kim'	Greenhouse	Mathers (OSU)	MI	2012	Over the top	Severe injury with 4 oz per acre applied twice; excellent liverwort control.
19338	SureGuard 51WDG	Lilac (Syringa sp.) 'Miss Kim'	Field Container	Mathers (OSU)	MI	2013	Over the top	Northland Farms: Acceptable injury when applied dormant at 4 oz per acre, mediocre liverwort control.
30140	SureGuard 51WDG	Lilac (Syringa sp.) S. meyeri 'Paliban'	Greenhouse	Mathers (OSU)	MI	2013	Over the top	Northland Farms: Virtually no injury when applied dormant at 4 oz per acre, mediocre liverwort control.
20378	SureGuard 51WDG	Yew (Taxus sp.) T. cuspidata	Field In-Ground	Ahrens/ Mervosh	CT	2000	Over the top	No injury at 0.17 and 0.34 lb ai per acre; great efficacy for large crabgrass and common ragweed.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
20296	SureGuard 51WDG	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Smaragd'	Field Container	Altland	OR	2002	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20381	SureGuard 51WDG	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Smaragd'	Field In-Ground	Altland	OR	2002	Over the top	No injury or growth reduction at 0.25, 0.5 and 1 lb ai per acre.
20296	SureGuard 51WDG	Red Cedar, Arborvitae (Thuja sp.) 'Smaragd'	Field Container	Altland	OR	2003	Over the top	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
20381	SureGuard 51WDG	Red Cedar, Arborvitae (Thuja sp.) 'Green Giant'	Field In-Ground	Hart	NJ	2003	Directed	No injury with dormant applications and with second application at 0.25 and 0.5 lb ai per acre, but minor transient injury was observed after the second application of 1.0 lb ai per acre.
30145	SureGuard 51WDG	Red Cedar, Arborvitae (Thuja sp.) T. 'Techny'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Lincoln: No crop injury with 12 oz/A + 0.25% NIS.
20368	SureGuard 51WDG	Jasmine, Asian Star (Trachelospermum asiaticum) 'Green'	Field Container	Fraelich	GA	2001	Over the top	No injury at 0.17, 0.34, and 0.68 lb ai per acre.
20369	SureGuard 51WDG	Blueberry (Non-Bearing) (Vaccinium sp.) V. ashei 'Climax'	Field Container	Gilliam	AL	2001	Over the top	Moderate to severe injury increasing with rate (0.17, 0.34, 0.68 lb ai per acre); excellent weed control.
20370	SureGuard 51WDG	Vervain (Verbena sp.) 'Homestead Purple'	Field Container	Anderson	OH	2002	Directed	No injury at 0.25, 0.5, and 1.0 lb ai per acre.
25455	SureGuard 51WDG	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) 'Autumn Jazz'	Field Container	Altland	OR	2006	Over the top	Moderate injury at all rates (0.375, 0.75, 1.5 lb ai per acre).
25455	SureGuard 51WDG	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) V. dentatum 'Chicago Lustre'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	Moderate to significant injury at all rates (0.375, 0.75, 1.5 lb ai per acre); plants visibly recovered, however there was significant growth reductions.
25456	SureGuard 51WDG	American Cranberrybush (Viburnum opulus var. americanum) 'Compactum'	Field Container	Senesac	NY	2006	Over the top	No injury at 0.375, 0.75, and 1.0 lb ai per acre.
20297	SureGuard 51WDG	Arrowwood (Viburnum sp.) V. x bodnantense 'Pink Dawn'	Field Container	Altland	OR	2002	Over the top	Significant injury at 0.25, 0.5, and 1.0 lb ai per acre; excellent oxalis control.
20297	SureGuard 51WDG	Arrowwood (Viburnum sp.) V. carlesii	Field Container	Altland	OR	2006	Over the top	High injury at 0.375, 0.75, and 1.5 lb ai per acre.
20297	SureGuard 51WDG	Arrowwood (Viburnum sp.) V. carlesii	Field Container	Altland	OR	2006	Over the top	Moderate to significant injury increasing with rate (0.375, 0.75, 1.5 lb ai per acre).
30147	SureGuard 51WDG	Arrowwood (Viburnum sp.) V. dentatum 'Double Pink'	Greenhouse	Mathers (OSU)	MI	2010	Over the top	Zelenka: Initial crop injury (33%) 1 WAT but plants recovered with no injury observed in later evaluations from 12 oz/A + 0.25% NIS.
30147	SureGuard 51WDG	Arrowwood (Viburnum sp.) V. rhytidophyllum 'Cree'	Greenhouse	Mathers (OSU)	MI	2012	Over the top	Data not reliable because of high injury to untreated check; excellent liverwort control.

PR #	Product	Crop	Production Site	Researcher	State	Year	Application Type	Results
30147	SureGuard 51WDG	Arrowwood (<i>Viburnum</i> sp.) <i>V. dentatum</i> 'Blue Muffin'	Greenhouse	Mathers (OSU)	MI	2013	Over the top	Spring Meadows: Acceptable injury when applied dormant at 4 oz per acre, unacceptable when applied during active plant growth; excellent liverwort control.
20297	SureGuard 51WDG	Arrowwood (<i>Viburnum</i> sp.) <i>V. plicatum</i> var <i>tomentosum</i> 'Mariesii'	Field Container	Neal	NC	2001	Over the top	Significant injury at 0.34 lb ai per acre with little recovery.
20297	SureGuard 51WDG	Arrowwood (<i>Viburnum</i> sp.) <i>V. nudum</i> 'Winterthur'	Field Container	Senesac	NY	2006	Over the top	Slight injury at 0.375 lb ai per acre and moderate injury at 0.75 and 1.5 lb ai per acre.
20371	SureGuard 51WDG	Periwinkle (<i>Vinca</i> sp.) <i>V. minor</i> 'Bowles'	Field Container	Boydston	WA	2003	Over the top	Slight delay in growth and flowering at 0.5 and 1.0 lb ai per acre, but by 10 WAT no differences were noted; excellent control of kochia with little control of grass weeds.
20371	SureGuard 51WDG	Periwinkle (<i>Vinca</i> sp.)	Field Container	Boydston	WA	2006	Over the top	No injury but significant growth reduction at 0.375, 0.75 and 1.5 lb ai per acre; plants saleable.
20371	SureGuard 51WDG	Periwinkle (<i>Vinca</i> sp.) <i>V. minor</i>	Field Container	Senesac	NY	2006	Over the top	Slight injury at 0.375 lb ai per acre, moderate at 0.75 and 1.5 lb ai per acre.

Label Suggestions

Based on the current data available, the following crop genera or species may be added for over-the-top applications to the list of plants already on the Broadstar 0.25G VC1604 label which is the only granular Broadstar formulation currently available in the marketplace.

Agapanthus sp.

Andropogon gerardii

Artemisia lactiflora

Buxus sp.

Calamagrostis acutiflora

Carex sp.

Ceanothus sp.

Clematis sp.

Cortaderia sp.

Crateaegus sp.

Cryptomeria japonica

Eragrostis curvula

Festuca ovina glauca

Gleditsia triacanthos

Gypsophila elegans

Hakonechloa sp.

Lavandula angustifolia

Liriope spicata

Loropetalum sp.

Nepeta catara

Nepeta x faassenii

Ophiopogon sp.

Salvia x sylvestris

Sporobolus heterolepis

Verbena sp.

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