



[Environment Horticulture Program Research Summaries](#)

IR-4 Environmental Horticulture Program Sulfentrazone Crop Safety

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Abstract

Since 1996 IR-4 has completed 259 trials with products containing sulfentrazone (Sulfentrazone 0.2G and Dismiss 4F) on 111 crops. The data contained in this report was generated to register uses of sulfentrazone on and around environmental horticulture plants with over-the-top applications. The sulfentrazone rates in the testing programs were 0.125, 0.25 and 0.5 pounds active ingredient per acre (lb ai per A) as the 1X, 2X and 4X rates. Sulfentrazone 0.2G had been applied to 54 plant genera or species. Of these, 12 exhibited no or minimal transient injury after application at all three rates. One crop exhibited no phytotoxicity at 0.125 and 0.25 lb ai per acre but did have some injury at 0.5 lb ai per acre. Only 3 crops (*Canna sp.*, *Echinacea purpurea*, and *Hosta sp.*) exhibited phytotoxicity at even the lowest rate. Dismiss 4F has been applied to 65 crops since 1996. Of these only 6 (*Buxus sp.*, *Ilex vomitoria* 'nana', *Juniperus horizontalis*, *Rosa sp.*, *Taxus sp.*, and *Thuja sp.*) exhibited no damage with over the top applications at all tested rates. Seven crops had minimal, transitory damage at the lower rates but some phytotoxicity at the 4X rate and 15 crops exhibited damage at all tested rates.

Introduction

Control of broadleaved weeds and sedges in the production of woody and herbaceous perennials can be problematic because nurseries grow many different types of plants and not all genera or species are listed on labels. These weeds can also be difficult to control in landscape settings for the same reason. IR-4 has undertaken developing crop safety on these and other crops with several herbicides. This summary covers the results from Sulfentrazone 0.2G and Dismiss 4F during from 2006 through 2019, supplemented with reports from earlier years.

Materials and Methods

Two applications of Sulfentrazone 0.2G or Dismiss 4F were made approximately 30 days apart. The application rates were 0.125, 0.25 and 0.5 lb ai per acre, plus a water treated control. A minimum of four plants (replicate treatments) were required with many researchers exceeding this minimum. Phytotoxicity was recorded on a scale of 0 to 10 (0 = no phytotoxicity; 10 = complete kill) at 1, 2, 4, 8, and 12 weeks after initial application. Some researchers also included readings 3 to 4 days after the initial and second applications. Sulfentrazone 0.2G was included in protocols 06-010 and 07-011; Dismiss 4F was included in 06-011, 07-011, 18-013, 18-019 and 19-013. Please visit <https://www.ir4project.org/ehc/ehc-registration-support-research/env-hort-researcher-resources/#Protocols> to view and download these protocols.

Sulfentrazone 0.2G and Dismiss 4F were supplied to researchers (See list of researchers in Appendix 2) by FMC Corporation.

Results and Summary

Phytotoxicity

Based on the type and nature of injury seen with Sulfentrazone 0.2G and Dismiss 4F applications in the conducted research, tested plant species were placed into four categories: 1) no significant phytotoxicity or growth differences from the untreated check or any injury was transitory, 2) no or minimal transitory injury seen at the 1X rate, but the 2X and/or 4X rates did cause significant phytotoxicity, 3) significant injury sufficient to recommend growers not utilize this product, and 4) more data is needed to make informed recommendations.

Sulfentrazone 4F exhibited no or minimal negative impact on six plant species: *Abies fraseri*, *Buxus sp.*, *Ilex vomitoria 'nana'*, *Juniperus horizontalis*, *Rosa sp.*, and *Thuja sp.* (Table 1). 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 10 crop species, there was no or little injury exhibited at the lower rate(s) tested, but significant phytotoxicity occurred at higher rate(s) (Table 2). It may be prudent to either conduct additional trials or place language on the label indicating applications of Sulfentrazone 4F do not cause injury at lower rates but higher rates may cause unacceptable injury. Fifteen crops in this report exhibited damage sufficient to recommend growers not utilize Sulfentrazone 4F as an over-the-top treatment: *Acer rubrum*, *Chasmanthium latifolium*, *Coreopsis lanceolata*, *Cortaderia sp.*, *Cuphea hyssopifolia*, *Echinacea purpurea*, *Phalaris arundinacea*, *Phlox subulata*, *Prunus avium*, *Rudbeckia hirta*, *Rudbeckia fulgida speciosa*, *Trachelospermum jasminoides*, *Verbena Canadensis*, *Viburnum dentatum*, *V.*

carlesii, and *V. tinus compacta* (Table 3). For 33 genera/species, more information is needed either because only 1 or 2 trials were conducted or because consistent results were not achieved among the research sites (Table 4).

Please see Table 9 for a list of individual trial summaries on Dismiss 4F.

Table 1. List of Dismiss 4F treated crops with no or minimal transitory injury.

<i>Abies fraseri</i> ¹	<i>Juniperus horizontalis</i>
<i>Buxus sp.</i>	<i>Rosa sp.</i>
<i>Ilex vomitoria</i> 'nana'	<i>Thuja sp.</i>

¹ For one in-ground application, moderate injury was observed.

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

<i>Abelia X grandiflora</i>	<i>Lirope muscari</i>
<i>Buddleia davidii</i>	<i>Picea glauca</i>
<i>Chasmanthium latifolium</i>	<i>Pseudotsuga menziesii</i>
<i>Festuca glauca</i>	<i>Rhododendron sp.</i>
<i>Lagerstroemia indica</i>	<i>Spirea sp.</i>

Table 3. List of Dismiss 4F treated crops exhibiting significant injury.

<i>Acer rubrum</i>	<i>Prunus avium</i>
<i>Chasmanthium latifolium</i>	<i>Rudbeckia hirta</i>
<i>Cortaderia sp.</i>	<i>Rudbeckia fulgida speciosa</i>
<i>Coreopsis lanceolata</i>	<i>Trachelospermum jasminoides</i>
<i>Cuphea hyssopifolia</i>	<i>Verbena canadensis</i>
<i>Echinacea purpurea</i>	<i>Viburnum dentatum</i>
<i>Phalaris arundinacea</i>	<i>Viburnum carlesii</i>
<i>Phlox subulata</i>	<i>Viburnum tinus compacta</i>

Table 4. List of Dismiss 4F treated crops where more information is needed.

<i>Calamagrostis acutiflora</i> ¹	<i>Gypsophila elegans</i>
<i>Cotoneaster horizontalis</i>	<i>Hedera helix</i>
<i>Euonymus alatus</i>	<i>Hosta sp.</i>
<i>Euonymus fortunei</i> ²	<i>Hydrangea sp.</i>
<i>Euonymus japonicus</i>	<i>Ilex crenata</i>
<i>Gaillardia pulchella</i>	<i>Ilex cornuta</i>
<i>Gardenia augusta</i>	<i>Ilex rotunda</i> ¹

Ilex x meserveae
*Illicium parviflorum*¹
*Lantana sp.*³
Ligustrum sp.
*Magnolia grandiflora*¹
Muhlenbergia capillaris
Panicum virgatum
Pennisetum setaceum
Picea abies
Pinus mugo

Quercus rubra
Ruellia brittoniana
Schizachyrium scoparium
*Taxodium distichum*¹
Taxus x media
*Trachycarpus fortunei*¹
Tsuga sp. canadensis
Tsuga sp.
Vinca sp.

¹ No or minimal transient injury in one or two trials.

² Differential response may be due to different cultivars.

Sulfentrazone 0.2G exhibited no or minimal negative impact on 12 plant species with over the top applications (Table 5). 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. In the research presented here, one plant exhibited significant injury at higher rates consistently among the research sites (Table 6). Only three crops exhibited damage sufficient to recommend growers not utilize Sulfentrazone 0.2G as an over-the-top treatment for pre-emergent weed control: *Canna sp.*, *Echinacea purpurea*, and *Hosta sp.* (Table 7). For 38 genera/species, more information is needed either because only 1 or 2 trials were conducted or because consistent results were not achieved among the research sites (Table 8).

Please see Table 9 for a list of individual trial summaries on Sulfentrazone 0.2G.

Table 5. List of Sulfentrazone 0.2G treated crops with no or minimal transitory injury.

Abies fraseri
Acer rubrum
Buxus microphylla
Chamaebatiaria sp.
Delosperma sp.
Gardenia augusta radicans
Helleborus niger

Quercus rubra
Rhododendron sp.
Rosa sp. (See Lieth 2006)
Spiraea x bumalda
Thuja occidentalis

Table 6. List of Sulfentrazone 0.2G treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

Pseutostuga menziesii (See Frieberger 2006; Lieth 2007)

Table 9. Detailed Summary of Crop Safety Testing with Sulfentrazone Liquid and Granular Formulations.

Notes: Table entries are sorted by crop Latin name. Only those trials with research reports received by 4/15/2020 are listed below.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
26620	Dismiss 4F (Sulfentrazone)	Abelia (Abelia sp.) A. x grandiflora 'John Creech'	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 lb ai per acre and moderate, unacceptable injury at 0.25 and 0.5 lb ai per acre.
25937	Dismiss 4F (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field In-Ground	Ahrens/Mervosh	CT	2006	Over the top	No injury to dormant trees, slight to moderate injury to actively growing trees at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25916	Dismiss 4F (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Altland	OR	2006	Over the top	No significant injury at 0.125, 0.25, and 0.5 lb ai per acre.
25916	Dismiss 4F (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Freiberger	NJ	2006	Over the top	Virtually no injury at all rates (0.125, 0.25 and 0.5 lb ai per acre) after 1st, moderate after 2nd application; no growth reduction
25916	Dismiss 4F (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Freiberger	NJ	2007	Over the top	No injury at 0.125 and 0.25, slight injury at 0.5 lb ai per acre
25916	Dismiss 4F (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Lieth	CA	2007	Over the top	No injury significantly different from untreated at 0.125, 0.25, and 0.5 lb ai per acre, however, sun damage did occur on all treatments after 4 WAT masking potential injury.
25934	Dismiss 4F (Sulfentrazone)	Maple, Red (Acer rubrum)	Field Container	Freiberger	NJ	2006	Over the top	High injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25934	Dismiss 4F (Sulfentrazone)	Maple, Red (Acer rubrum) 'Red Sunset'	Field Container	Williams	IL	2007	Over the top	Virtually no injury at 0.125, slight at 0.25 and 0.5 lb ai per acre
25003	Dismiss 4F (Sulfentrazone)	Butterfly Bush (Buddleia davidii) 'Black Knight'	Field Container	Derr	VA	2005		Low injury at 0.25 and 0.5 lb ai per acre, unacceptable at 1.0 lb ai per acre.
25884	Dismiss 4F (Sulfentrazone)	Boxwood (Buxus sp.) B. 'Green Velvet'	Field Container	Williams	IL	2007	Over the top	No significant injury at 0.125, 0.25, and 0.5 lb ai per acre.
25884	Dismiss 4F (Sulfentrazone)	Boxwood (Buxus sp.) B. microphylla 'Green Beauty'	Field Container	Wilen	CA	2006	Over the top	Acceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25884	Dismiss 4F (Sulfentrazone)	Boxwood (Buxus sp.) 'Green Mountain'	Field Container	Marshall	MI	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
33345	Dismiss 4F (Sulfentrazone)	Feather Reed Grass (Calamagrostis acutiflora) 'Overdam'	Field Container	Moretti	OR	2019	Over the top	No injury or significant growth reduction with 8, 16 and 24 fl oz per acre applied twice.
33343	Dismiss 4F (Sulfentrazone)	Indian Woodoats (Chasmanthium latifolium)	Field Container	Wilen	CA	2018	Over the top	Acceptable injury with 8 and 16 fl oz per acre, unacceptable with 32 fl oz per acre.
24526	Dismiss 4F (Sulfentrazone)	Tickseed, Lanceleaf (Coreopsis lanceolata)	Field In-Ground	Norcini	FL	2005		Moderate to severe injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
33342	Dismiss 4F (Sulfentrazone)	Pampas Grass (Cortaderia sp.) 'Rosea'	Field Container	Senesac	NY	2018	Over the top	Moderate to severe injury with 8, 16 and 32 oz per acre applied twice; stunting at all rates.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25955	Dismiss 4F (Sulfentrazone)	Cotoneaster (Cotoneaster sp.)	Field Container	Williams	IL	2007	Over the top	No injury at 0.125, slight at 0.25 and 0.5 lb ai per acre
25955	Dismiss 4F (Sulfentrazone)	Cotoneaster (Cotoneaster sp.) C. horizontalis	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25793	Dismiss 4F (Sulfentrazone)	False Heather, Elfin Herb, Mexican Heather (Cuphea hyssopifolia)	Field In-Ground	Chen	LA	2005	Foliar	Moderate to severe injury (0.25, 0.5, 1.0 lb ai per acre).
25965	Dismiss 4F (Sulfentrazone)	Purple Coneflower (Echinacea sp.) 'Ruby Star'	Field Container	Derr	VA	2007	Over the top	Significant injury at 0.125, 0.25 and 0.5 lb ai per acre with 4F and at the highest rate with G formulations; poor yellow nutsedge control
25983	Dismiss 4F (Sulfentrazone)	Spindletree (Euonymus sp.) E. alatus 'Compacta'	Field Container	Williams	IL	2007	Over the top	Moderate injury at 0.125, 0.25 and 0.5 lb ai per acre
25983	Dismiss 4F (Sulfentrazone)	Spindletree (Euonymus sp.) E. alatus 'Compactus'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	Slight injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25983	Dismiss 4F (Sulfentrazone)	Spindletree (Euonymus sp.) E. fortunei	Field Container	Derr	VA	2005	Over the top	No injury at all rates (0.25, 0.5, 1.0 lb ai per acre).
25983	Dismiss 4F (Sulfentrazone)	Spindletree (Euonymus sp.) E. fortunei 'Coloratus'	Field Container	Williams	IL	2007	Over the top	Virtually no injury at 0.125, 0.25 and 0.5 lb ai per acre
25983	Dismiss 4F (Sulfentrazone)	Spindletree (Euonymus sp.) E. japonicus 'Aureo Marginatus'	Field Container	Wilen	CA	2006	Over the top	Acceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
33350	Dismiss 4F (Sulfentrazone)	Field Fescue (Festuca glauca)	Field Container	Cochran (IA)	IA	2018	Over the top	No significant injury or growth reduction with 8, 16 and 24 oz per acre applied twice.
33350	Dismiss 4F (Sulfentrazone)	Field Fescue (Festuca glauca) 'Elijah Blue'	Field Container	Senesac	NY	2018	Over the top	No injury with 8, minor and moderate with 16 and 32, oz per acre applied twice; no stunting.
33350	Dismiss 4F (Sulfentrazone)	Field Fescue (Festuca glauca) 'Elijah Blue'	Field Container	Wilen	CA	2018	Over the top	Marginal injury at 8 and 16 fl oz per acre, unacceptable at 32 fl oz per acre.
24528	Dismiss 4F (Sulfentrazone)	Blanket Flower (Gaillardia sp.) G. pulchella	Field In-Ground	Norcini	FL	2005		Moderate, transient injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
26549	Dismiss 4F (Sulfentrazone)	Cape Jasmine (Gardenia augusta)	Field Container	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25953	Dismiss 4F (Sulfentrazone)	Baby's Breath (Gypsophila elegans)	Field Container	Senesac	NY	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
26690	Dismiss 4F (Sulfentrazone)	Ivy, English (Hedera helix)	Field Container	Derr	VA	2005		Very slight injury at all rates (0.25, 0.5, 1.0 lb ai per acre).
26690	Dismiss 4F (Sulfentrazone)	Ivy, English (Hedera helix) 'Thorndale'	Field Container	Williams	IL	2007	Over the top	Virtually no injury at 0.125, 0.25 and 0.5 lb ai per acre
26691	Dismiss 4F (Sulfentrazone)	Plantain Lily (Hosta sp.) 'Halcyon'	Field Container	Derr	VA	2005		Very low phyto at 0.25 and 0.5 lb ai per acre; low phyto at 1.0 lb ai per acre.
24529	Dismiss 4F (Sulfentrazone)	Hydrangea (Hydrangea sp.) H. paniculata 'Pink Diamond'	Field Container	Norcini	FL	2005		Moderate to severe increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
24529	Dismiss 4F (Sulfentrazone)	Hydrangea (Hydrangea sp.) Variegated	Field Container	Derr	VA	2005		Very slight injury at all rates (0.25, 0.5, 1.0 lb ai per acre).

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25958	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.)	Field Container	Trader	MS	2007	Over the top	No injury or growth reduction at 0.125, 0.25 and 0.5 lb ai per acre
25958	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) I. cornuta 'bufordii nana'	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25958	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) I. crenata 'Green Luster'	Field Container	Whitwell	SC	2007	Over the top	No injury at 0.125, 0.25 and 0.5 lb ai per acre after 1st, minor injury with quick recovery after 2nd application; no growth reduction
26583	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) I. rotunda	Field In-Ground	Czarnota	GA	2005	Over the top	Slight injury increasing with rate (0.094, 0.188, 0.375, 0.75 lb ai per acre).
26583	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) I. rotunda	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25958	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) I. x meserveae 'Blue Princess'	Field Container	Altland	OR	2006	Over the top	Slight to moderate, transient injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
25958	Dismiss 4F (Sulfentrazone)	Holly (Ilex sp.) 'Ivory queen'	Field Container	Marshall	MI	2006		Slight to moderate injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
25929	Dismiss 4F (Sulfentrazone)	Yaupon (Ilex vomitoria)	Field Container	Lieth	CA	2007	Over the top	No injury or growth reduction at 0.125, 0.25 and 0.5 lb ai per acre
25929	Dismiss 4F (Sulfentrazone)	Yaupon (Ilex vomitoria)	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25929	Dismiss 4F (Sulfentrazone)	Yaupon (Ilex vomitoria)	Field Container	Trader	MS	2007	Over the top	No injury at 0.125, 0.25 and 0.5 lb ai per acre; very slight growth reduction at 4X
25929	Dismiss 4F (Sulfentrazone)	Yaupon (Ilex vomitoria) 'Schillings'	Field Container	Whitwell	SC	2007	Over the top	No injury or growth reduction at 0.125, 0.25 and 0.5 lb ai per acre
26577	Dismiss 4F (Sulfentrazone)	Anise Tree (Illicium sp.) I. parviflorum	Field In-Ground	Czarnota	GA	2005	Over the top	Very slight injury at all rates (0.094, 0.188, 0.375, 0.75 lb ai per acre).
26577	Dismiss 4F (Sulfentrazone)	Anise Tree (Illicium sp.) I. parviflorum	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
12113	Dismiss 4F (Sulfentrazone)	Juniper (Juniperus sp.) J. horizontalis 'Bar Harbor'	Field In-Ground	Derr	VA	2005		No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
12113	Dismiss 4F (Sulfentrazone)	Juniper (Juniperus sp.) J. horizontalis 'Plumosa'	Field In-Ground	Ahrens	CT	1996		No injury (0.125, 0.25, 0.5 lb ai per acre). NOTE: this trial used Spartan 75DF.
12113	Dismiss 4F (Sulfentrazone)	Juniper (Juniperus sp.) J. horizontalis 'Wiltoni'	Field In-Ground	Norcini	FL	2005		No injury (0.25, 0.5, 1.0 lb ai per acre).
24530	Dismiss 4F (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica)	Field In-Ground	Czarnota	GA	2005	Over the top	No injury at 0.094, 0.188, 0.375, and 0.75 lb ai per acre.
24530	Dismiss 4F (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
24518	Dismiss 4F (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica) 'Cheyenne'	Field Container	Norcini	FL	2005		Moderate injury, plants recovered by 12 WAT (0.125, 0.25, 0.5 lb ai per acre).
24518	Dismiss 4F (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica) L. x Tuscarora	Field Container	Neal	NC	2006	Over the top	Moderate to significant injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
24737	Dismiss 4F (Sulfentrazone)	Lantana (<i>Lantana</i> sp.)	Field In-Ground	Williams	IL	2007	Over the top	No injury at 0.125, very slight at 0.25 and 0.5 lb ai per acre
24737	Dismiss 4F (Sulfentrazone)	Lantana (<i>Lantana</i> sp.) 'New Gold'	Field In-Ground	Chen	LA	2005	Foliar	Moderate to severe injury (0.25, 0.5, 1.0 lb ai per acre).
25014	Dismiss 4F (Sulfentrazone)	Privet (<i>Ligustrum</i> sp.) 'Chinense'	Field Container	Derr	VA	2005		Low phyto at 0.25 and 0.5 lb ai per acre; unacceptable at 1.0 lb ai per acre.
25299	Dismiss 4F (Sulfentrazone)	Lilyturf, Big Blue (<i>Liriope muscari</i>) 'Big Blue'	Field In-Ground	Chen	LA	2005	Foliar	Moderate to severe (0.25, 0.5, 1.0 lb ai per acre).
25962	Dismiss 4F (Sulfentrazone)	Lilyturf (<i>Liriope</i> sp.) <i>L. muscari variegata</i>	Field Container	Derr	VA	2005	Over the top	Low at 0.25 and 0.5 lb ai per acre; unacceptable at 1 lb per acre.
25962	Dismiss 4F (Sulfentrazone)	Lilyturf (<i>Liriope</i> sp.) <i>L. muscari variegata</i>	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 and 0.25 lb ai per acre and moderate unacceptable injury at 0.5 lb ai per acre.
25962	Dismiss 4F (Sulfentrazone)	Lilyturf (<i>Liriope</i> sp.) <i>L. muscari variegata</i> 'Aztec'	Field Container	Derr	VA	2007	Over the top	Slight injury at 0.125, 0.25 and 0.5 lb ai per acre.
26558	Dismiss 4F (Sulfentrazone)	Magnolia, Southern (<i>Magnolia grandiflora</i>)	Field In-Ground	Czarnota	GA	2005	Over the top	No injury at 0.094, 0.188, 0.375, and 0.75 lb ai per acre.
26558	Dismiss 4F (Sulfentrazone)	Magnolia, Southern (<i>Magnolia grandiflora</i>)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
33348	Dismiss 4F (Sulfentrazone)	Silver Grass (<i>Miscanthus</i> sp.)	Field Container	Miller	WA	2018	Over the top	No significant injury or growth reduction with 8, 16 and 24 fl oz per acre applied twice.
33346	Dismiss 4F (Sulfentrazone)	Muhly, Hairawn (<i>Muhlenbergia capillaris</i>)	Field Container	Cochran (IA)	IA	2018	Over the top	No significant injury or growth reduction with 8 oz per acre applied twice; moderate injury with 16 and 24 oz; no growth reduction.
33346	Dismiss 4F (Sulfentrazone)	Muhly, Hairawn (<i>Muhlenbergia capillaris</i>) 'Pink Muhly Grass'	Field Container	Moretti	OR	2019	Over the top	Minor injury with 8, moderate with 16 and 24 fl oz per acre, applied twice; moderate growth reduction at 4X.
25963	Dismiss 4F (Sulfentrazone)	Mondo Grass; Lilyturf; Ker-Gawl (<i>Ophiopogon</i> sp.) <i>O. japonicum</i>	Field Container	Wilen	CA	2018	Over the top	Unacceptable injury with 8, 16 and 32 fl oz per acre.
24767	Dismiss 4F (Sulfentrazone)	Phlox (<i>Phlox</i> sp.) <i>P. subulata</i> 'Emerald Blue'	Field Container	Derr	VA	2005		Plants outgrew visible damage but there appeared to be reduction in fresh shoot weight (0.25, 0.5, 1.0 lb ai per acre)
25301	Dismiss 4F (Sulfentrazone)	Phlox, Moss (<i>Phlox subulata</i>) 'Candy Strip'	Field In-Ground	Chen	LA	2005	Foliar	Slight to moderate injury (0.25, 0.5, 1.0 lb ai per acre).
25932	Dismiss 4F (Sulfentrazone)	Spruce, Norway (<i>Picea abies</i>)	Field Container	Altland	OR	2006	Over the top	No injury after the first application and only very slight injury at the highest rate after the second (0.125, 0.25, 0.5 lb ai per acre).
25932	Dismiss 4F (Sulfentrazone)	Spruce, Norway (<i>Picea abies</i>)	Field Container	Aulakh	CT	2018	Over the top	No injury with 8, minor with 16, and moderate with 24, fl oz per acre applied twice; no significant growth reduction.
25932	Dismiss 4F (Sulfentrazone)	Spruce, Norway (<i>Picea abies</i>)	Field Container	Freiberger	NJ	2006	Over the top	No injury at all rates (0.125, 0.25 and 0.5 lb ai per acre) after 1st, moderate after 2nd application; no growth reduction

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33353	Dismiss 4F (Sulfentrazone)	Spruce (Picea sp.) P. glauca 'Conica'	Field Container	Moretti	OR	2018	Over the top	No injury or height reduction with 8, 16 and 24 fl oz per acre applied twice to actively growing plants.
33353	Dismiss 4F (Sulfentrazone)	Spruce (Picea sp.) P. glauca 'Densata'	Field Container	Senesac	NY	2018	Over the top	Moderate to severe injury with 8, 16 and 32 oz per acre applied twice; stunting at all rates.
33352	Dismiss 4F (Sulfentrazone)	Pine (Pinus sp.) P. mugo 'Pumilo'	Field Container	Moretti	OR	2018	Over the top	No injury or height reduction with 8, 16 and 24 fl oz per acre applied twice to actively growing plants.
33352	Dismiss 4F (Sulfentrazone)	Pine (Pinus sp.) P. mugo var. pumilo	Field Container	Senesac	NY	2018	Over the top	Moderate to severe injury with 8, 16 and 32 oz per acre applied twice; stunting at all rates.
25931	Dismiss 4F (Sulfentrazone)	Plum (Prunus sp.) P. avium	Field Container	Altland	OR	2006	Over the top	Moderate injury increasing with rate along with decrease in plant height and caliper (0.125, 0.25, 0.5 lb ai per acre).
25941	Dismiss 4F (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field In-Ground	Ahrens/Mervosh	CT	2006	Over the top	No injury to dormant trees, acceptable injury to actively growing trees at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25915	Dismiss 4F (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Altland	OR	2006	Over the top	Minor injury after the first application at all rates, but no injury after the second (0.125, 0.25, 0.5 lb ai per acre).
25915	Dismiss 4F (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Lieth	CA	2007	Over the top	No significant injury at 0.125 lb ai per acre after a single application; however chlorotic shoot tips and necrotic needles were observed after the second application.
25915	Dismiss 4F (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii) P. menziesii glauca	Field Container	Freiberger	NJ	2006	Over the top	Slight injury at 0.125 and 0.25 lb ai per acre, moderate at 4X rate; no growth reduction
25915	Dismiss 4F (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii) P. menziesii glauca	Field Container	Freiberger	NJ	2007	Over the top	Slight to moderate injury at 0.125 and 0.25, moderate to high at 0.5 lb ai per acre
25930	Dismiss 4F (Sulfentrazone)	Oak, Red (Quercus rubra)	Field Container	Altland	OR	2006	Over the top	Slight transient injury after the first application, but no significant injury after the second (0.125, 0.25, 0.5 lb ai per acre).
25930	Dismiss 4F (Sulfentrazone)	Oak, Red (Quercus rubra)	Field Container	Freiberger	NJ	2006	Over the top	Moderate injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Amelia Rose'	Field Container	Gilliam	AL	2007	Over the top	Slight injury after 1st but none after 2nd application only at 0.5 lb ai per acre (4X); no growth reduction
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Ex Cannons Double Pk'	Field Container	Marshall	MI	2006	Over the top	No to slight injury increasing with rate, but no difference in plant growth (0.125, 0.25, 0.5 lb ai per acre).
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Fashion'	Field Container	Norcini	FL	2005	Over the top	Slight transient injury (0.25, 0.5, 1.0 lb ai per acre).

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25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Formosa'	Field Container	Derr	VA	2005	Over the top	Moderate but transient injury at all rates (0.25, 0.5, 1.0 lb ai per acre).
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'George Tabor'	Field Container	Derr	VA	2007	Over the top	Very slight injury at 0.125, 0.25 and 0.5 lb ai per acre with G and 4F formulations; poor yellow nutsedge control
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Nuccio's Wild Cherry'	Field Container	Wilen	CA	2006	Over the top	Unacceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Pink Gumpo'	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 lb ai per acre and moderate unacceptable injury at 0.25 and 0.5 lb ai per acre.
12114	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field In-Ground	Ahrens	CT	1996	Over the top	No injury (0.125, 0.25, 0.5 lb ai per acre).
12114	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) R. catawbiense 'Roseum Elegans'	Field In-Ground	Ahrens/Mervosh	CT	1995	Over the top	No injury (0.125, 0.25, 0.5 lb ai per acre). NOTE: this trial used Spartan 75DF.
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) Rhododendron 'P.J.M.'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	Slight injury after 1st, no injury after 2nd application at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25952	Dismiss 4F (Sulfentrazone)	Azalea & Rhododendron (Rhododendron sp.) 'Tradition'	Field Container	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25966	Dismiss 4F (Sulfentrazone)	Rose (Rosa sp.)	Field Container	Trader	MS	2007	Over the top	No injury but slight growth reduction at 0.125, 0.25 and 0.5 lb ai per acre
25966	Dismiss 4F (Sulfentrazone)	Rose (Rosa sp.) R. multiflora	Field Container	Freiberger	NJ	2006	Over the top	No to slight injury at all rates (0.125, 0.25 and 0.5 lb ai per acre) after 1st, moderate after 2nd application; no growth reduction
25966	Dismiss 4F (Sulfentrazone)	Rose (Rosa sp.) 'Sea Foam'	Field Container	Senesac	NY	2006	Over the top	Slight, transient injury after second application (0.125, 0.25, 0.5 lb ai per acre).
26062	Dismiss 4F (Sulfentrazone)	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa)	Field Container	Williams	IL	2007	Over the top	Slight injury at 0.125, moderate at 0.25 and 0.5 lb ai per acre
26062	Dismiss 4F (Sulfentrazone)	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa) 'Meadowbrite'	Field Container	Marshall	MI	2006	Over the top	Moderate to significant injury as well as significant decrease in growth, increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
24527	Dismiss 4F (Sulfentrazone)	Black-Eyed Susan (Rudbeckia hirta) R. hirta	Field In-Ground	Norcini	FL	2005	Over the top	Moderate to severe initial injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
24789	Dismiss 4F (Sulfentrazone)	Carolina Wild Petunia (Ruellia caroliniensis) R. brittoniana 'Katie'	Field In-Ground	Chen	LA	2005	Foliar	Slight injury (0.25, 0.5, 1.0 lb ai per acre).

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25954	Dismiss 4F (Sulfentrazone)	Bridal-Wreath (<i>Spiraea</i> sp.) 'Goldflame'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	Moderate to high injury after the 1st application at all rates (0.125, 0.25 and 0.5 lb ai per acre), less injury after 2nd application
25954	Dismiss 4F (Sulfentrazone)	Bridal-Wreath (<i>Spiraea</i> sp.) <i>S. decumbens</i>	Field Container	Senesac	NY	2006	Over the top	Slight to severe injury especially at higher rates (0.125, 0.25, 0.5 lb ai per acre).
25954	Dismiss 4F (Sulfentrazone)	Bridal-Wreath (<i>Spiraea</i> sp.) <i>S. japonica</i> 'Little Princess'	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 and 0.25 lb ai per acre and moderate unacceptable injury at 0.5 lb ai per acre.
26554	Dismiss 4F (Sulfentrazone)	Bald Cypress (<i>Taxodium distichum</i>)	Field In-Ground	Czarnota	GA	2005	Over the top	No injury at 0.094, 0.188, 0.375, and 0.75 lb ai per acre.
26554	Dismiss 4F (Sulfentrazone)	Bald Cypress (<i>Taxodium distichum</i>)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
33355	Dismiss 4F (Sulfentrazone)	Hybrid Yew (<i>Taxus X media</i>) 'Hicksii'	Field Container	Senesac	NY	2018	Over the top	Minor to moderate injury with 8, 16 and 32 oz per acre applied twice; stunting at all rates.
33355	Dismiss 4F (Sulfentrazone)	Hybrid Yew (<i>Taxus X media</i>) <i>T. media</i> 'Densiformis'	Field Container	Moretti	OR	2018	Over the top	No injury or height reduction with 8, 16 and 24 fl oz per acre applied twice to actively growing plants.
25914	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) 'Emerald Green'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	No injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
12112	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i>	Field In-Ground	Czarnota	GA	2005		No injury at 0.088, 0.194, 0.375, and 0.75 lb ai per acre.
12112	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i>	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25914	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Techney'	Field Container	Williams	IL	2007	Over the top	No injury at 0.125, very slight at 0.25 and 0.5 lb ai per acre
25914	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Elegantissima'	Field Container	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
12112	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Globosa'	Field In-Ground	Ahrens	CT	1996		No injury at 0.125, 0.25 and 0.375 lb ai per acre; NOTE: this trial used Spartan 75DF.
12112	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Globosa'	Field In-Ground	Ahrens	CT	1996	Over the top	No injury at 0.125, 0.25 and 0.375 lb ai per acre; NOTE: this trial used Spartan 75DF.
12112	Dismiss 4F (Sulfentrazone)	Red Cedar, <i>Arborvitae</i> (<i>Thuja</i> sp.) <i>T. occidentalis</i> 'Globosa'	Field In-Ground	Ahrens/Mervosh	CT	1997	Over the top	No injury at 0.125, 0.25 and 0.375 lb ai per acre; NOTE: this trial used Spartan 75DF.
26463	Dismiss 4F (Sulfentrazone)	Jasmine, Confederate (<i>Trachelospermum jasminoides</i>)	Field Container	Wilen	CA	2006	Over the top	Slight to moderate unacceptable injury increasing with rate after single application, but second application yielded unacceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
26571	Dismiss 4F (Sulfentrazone)	Palm, Chinese Windmill (<i>Trachycarpus fortunei</i>)	Field In-Ground	Czarnota	GA	2005	Over the top	Very slight to slight injury at all rates (0.094, 0.188, 0.375, 0.75 lb ai per acre).

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26571	Dismiss 4F (Sulfentrazone)	Palm, Chinese Windmill (Trachycarpus fortunei)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
33354	Dismiss 4F (Sulfentrazone)	Hemlock (Tsuga sp.)	Field Container	Aulakh	CT	2018	Over the top	No significant injury with 8, minor with 16 and 24, fl oz per acre applied twice; no significant growth reduction.
33354	Dismiss 4F (Sulfentrazone)	Hemlock (Tsuga sp.)	Field Container	Miller	WA	2018	Over the top	Severe injury with 8, 16 and 24 fl oz per acre applied twice.
33354	Dismiss 4F (Sulfentrazone)	Hemlock (Tsuga sp.) T. canadensis	Field Container	Witcher	TN	2018	Over the top	Minor injury with 8 and 16, moderate with 24, fl oz per acre applied twice; no growth reduction.
24753	Dismiss 4F (Sulfentrazone)	Vervain (Verbena sp.) V. canadensis 'Homestead Purple'	Field In-Ground	Chen	LA	2005	Foliar	Moderate to severe injury (0.25, 0.5, 1.0 lb ai per acre)
25016	Dismiss 4F (Sulfentrazone)	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum)	Field Container	Freiberger	NJ	2006	Over the top	Slight to moderate injury at 0.125 and 0.25 lb ai per acre, high at 4X rate; some growth reduction
25016	Dismiss 4F (Sulfentrazone)	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) 'Autum Jazz'	Field Container	Altland	OR	2006	Over the top	Moderate to significant injury with single application at all rates (0.125, 0.25, 0.5 lb ai per acre).
25016	Dismiss 4F (Sulfentrazone)	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) 'Mirrorleaf'	Field Container	Derr	VA	2005	Over the top	Slight, transient injury at all rates (0.25, 0.5, 1.0 lb ai per acre)
26525	Dismiss 4F (Sulfentrazone)	Arrowwood (Viburnum sp.) V. carlessi	Field Container	Altland	OR	2006	Over the top	Moderate to significant injury with single application at all rates (0.125, 0.25, 0.5 lb ai per acre).
26525	Dismiss 4F (Sulfentrazone)	Arrowwood (Viburnum sp.) V. tinus compacta	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 lb ai per acre and moderate, unacceptable injury at 0.25 and 0.5 lb ai per acre.
25964	Dismiss 4F (Sulfentrazone)	Periwinkle (Vinca sp.) 'Alba'	Field Container	Marshall	MI	2006	Over the top	No visible injury however plant growth was reduced increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
25964	Dismiss 4F (Sulfentrazone)	Periwinkle (Vinca sp.) V. minor	Field Container	Freiberger	NJ	2007	Over the top	No injury after 1st, slight injury after 2nd application at 0.125, 0.25 and 0.5 lb ai per acre
25372	Sulfentrazone 0.2G (Sulfentrazone)	Abelia (Abelia sp.) A. x grandiflora 'John Creech'	Field Container	Neal	NC	2006	Over the top	No injury at 0.125 and 0.25 lb ai per acre with slight, transient injury at 0.5 lb ai per acre.
25372	Sulfentrazone 0.2G (Sulfentrazone)	Abelia (Abelia sp.) A. x grandiflora 'Little Richard'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
25366	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Altland	OR	2006	Over the top	No significant injury at 0.125, 0.25, and 0.5 lb ai per acre.
25366	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Freiberger	NJ	2007	Over the top	No injury at 0.125, 0.25 and 0.5 lb ai per acre

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25366	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Fraser (Abies fraseri)	Field Container	Lieth	CA	2007	Over the top	No injury significantly different from untreated at 0.125, 0.25, and 0.5 lb ai per acre, however, sun damage did occur on all treatments after 4 WAT masking potential injury.
25923	Sulfentrazone 0.2G (Sulfentrazone)	Maple, Red (Acer rubrum)	Field In-Ground	Beste/Frank (ARS)	MD	2006		Slight to moderate, but transient, injury increasing with rate (0.125, 0.25, and 0.5 lb ai per acre); all plants marketable at end of experiment.
25359	Sulfentrazone 0.2G (Sulfentrazone)	Maple, Red (Acer rubrum)	Field Container	Fraelich	GA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre).
25359	Sulfentrazone 0.2G (Sulfentrazone)	Maple, Red (Acer rubrum)	Field Container	Mathers (OSU)	OH	2006	Over the top	No significant injury at 0.125, 0.25, and 0.5 lb ai per acre.
25322	Sulfentrazone 0.2G (Sulfentrazone)	Boxwood (Buxus sp.) B. microphylla 'Green Beauty'	Field Container	Wilen	CA	2006	Over the top	Acceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25322	Sulfentrazone 0.2G (Sulfentrazone)	Boxwood (Buxus sp.) B. microphylla 'Green Velvet'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
25322	Sulfentrazone 0.2G (Sulfentrazone)	Boxwood (Buxus sp.) B. microphylla var koreana	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
25322	Sulfentrazone 0.2G (Sulfentrazone)	Boxwood (Buxus sp.) 'Green Mountain'	Field Container	Mathers (OSU)	OH	2006	Over the top	No injury at 0.125 lb ai per acre, moderate injury at 0.25 lb ai per acre, and slight injury at 0.5 lb ai per acre.
25374	Sulfentrazone 0.2G (Sulfentrazone)	Canna (Canna sp.) 'Cherry'	Field Container	Fraelich	GA	2006	Over the top	Moderate injury at 1X and 2X rates, severe at 4X; growth reduction at all rates
25365	Sulfentrazone 0.2G (Sulfentrazone)	Desert Sweet (Chamaebatiaria sp.)	Field Container	Klett	CO	2006	Over the top	Experiment A: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25365	Sulfentrazone 0.2G (Sulfentrazone)	Desert Sweet (Chamaebatiaria sp.)	Field Container	Klett	CO	2006	Over the top	Experiment B: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25365	Sulfentrazone 0.2G (Sulfentrazone)	Desert Sweet (Chamaebatiaria sp.)	Field Container	Klett	CO	2006	Over the top	Experiment C: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25375	Sulfentrazone 0.2G (Sulfentrazone)	Cotoneaster (Cotoneaster sp.) C. dammeri 'Skolghomen'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
25375	Sulfentrazone 0.2G (Sulfentrazone)	Cotoneaster (Cotoneaster sp.) C. horizontalis	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25293	Sulfentrazone 0.2G (Sulfentrazone)	False Heather, Elfin Herb, Mexican Heather (Cuphea hyssopifolia) C. allyson	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25293	Sulfentrazone 0.2G (Sulfentrazone)	False Heather, Elfin Herb, Mexican Heather (Cuphea hyssopifolia) C. hyssopifolia 'Tsy Bitsy White'	Field Container	Lieth	CA	2006	Over the top	High injury and growth reduction at all rates; plants unmarketable (0.125, 0.25, 0.5 lb ai per acre).
25363	Sulfentrazone 0.2G (Sulfentrazone)	Delosperma (Delosperma sp.) 'Kelaidis'	Field Container	Klett	CO	2006	Over the top	Experiment A: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)

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25363	Sulfentrazone 0.2G (Sulfentrazone)	Delosperma (Delosperma sp.) 'Kelaidis'	Field Container	Klett	CO	2006	Over the top	Experiment B: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25363	Sulfentrazone 0.2G (Sulfentrazone)	Delosperma (Delosperma sp.) 'Kelaidis'	Field Container	Klett	CO	2006	Over the top	Experiment C: No significant injury at 0.125 and 0.25 lb ai per acre, slight at 0.5 lb ai
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.)	Field Container	Klett	CO	2006	Over the top	Experiment A: Severe injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.)	Field Container	Klett	CO	2006	Over the top	Experiment B: Severe injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.)	Field Container	Klett	CO	2006	Over the top	Experiment C: Severe injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.) E. purpurea magnus	Field Container	Fraelich	GA	2006	Over the top	Severe injury and stunting at all rates (0.125, 0.25, 0.5 lb ai per acre).
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.) E. purpurea 'Magnus'	Field Container	Boydston	WA	2006	Over the top	Significant injury and growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre).
25377	Sulfentrazone 0.2G (Sulfentrazone)	Purple Coneflower (Echinacea sp.) 'Ruby Star'	Field Container	Derr	VA	2007	Over the top	Significant injury at 0.5 lb ai per acre.
25007	Sulfentrazone 0.2G (Sulfentrazone)	Spindletree (Euonymus sp.) E. alata 'Compacta'	Field Container	Mathers (OSU)	OH	2006	Over the top	Very slight injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25007	Sulfentrazone 0.2G (Sulfentrazone)	Spindletree (Euonymus sp.) E. alatus 'Compactus'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	Virtually no injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25007	Sulfentrazone 0.2G (Sulfentrazone)	Spindletree (Euonymus sp.) E. japonicus 'Aureo Marginatus'	Field Container	Wilén	CA	2006	Over the top	Acceptable injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25007	Sulfentrazone 0.2G (Sulfentrazone)	Spindletree (Euonymus sp.) E. patens 'Manhattan'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
25378	Sulfentrazone 0.2G (Sulfentrazone)	Cape Jasmine (Gardenia augusta)	Field Container	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25378	Sulfentrazone 0.2G (Sulfentrazone)	Cape Jasmine (Gardenia augusta)	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25378	Sulfentrazone 0.2G (Sulfentrazone)	Cape Jasmine (Gardenia augusta) 'Radicans'	Field Container	Fraelich	GA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre).
25358	Sulfentrazone 0.2G (Sulfentrazone)	Baby's Breath (Gypsophila elegans)	Field Container	Senesac	NY	2006	Over the top	No injury at lower rates; very slight, transient injury at highest (0.125, 0.25, 0.5 lb ai per acre).
26036	Sulfentrazone 0.2G (Sulfentrazone)	Baby's Breath (Gypsophila paniculata) 'Festival Star'	Field Container	Lieth	CA	2006	Over the top	Unacceptable injury and growth reduction at 0.125, 0.25 and 0.50 lb ai per acre
25005	Sulfentrazone 0.2G (Sulfentrazone)	Ivy, English (Hedera helix)	Field Container	Boydston	WA	2006	Over the top	No injury but delayed growth; plants marketable (0.125, 0.25, 0.5 lb ai per acre).
25005	Sulfentrazone 0.2G (Sulfentrazone)	Ivy, English (Hedera helix) 'Glacier Ivy'	Field Container	Fraelich	GA	2006	Over the top	Slight injury at 1X and 2X rates, moderate at 4X; no growth reduction
25367	Sulfentrazone 0.2G (Sulfentrazone)	Hellebore, Black (Helleborus niger)	Field Container	Klett	CO	2006	Over the top	Experiment A: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25367	Sulfentrazone 0.2G (Sulfentrazone)	Hellebore, Black (Helleborus niger)	Field Container	Klett	CO	2006	Over the top	Experiment B: No significant injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25367	Sulfentrazone 0.2G (Sulfentrazone)	Hellebore, Black (Helleborus niger)	Field Container	Klett	CO	2006	Over the top	Experiment C: No significant injury after 1st application at all rates (0.125, 0.25 and 0.5 lb ai per acre), slight after 2nd application at 2X and 4X
25367	Sulfentrazone 0.2G (Sulfentrazone)	Hellebore, Black (Helleborus niger) 'Pink Lady'	Field Container	Boydston	WA	2006	Over the top	Virtually no injury at 0.125, 0.25 and 0.5 lb ai per acre; most plants did not survive severe winter
25009	Sulfentrazone 0.2G (Sulfentrazone)	Plantain Lily (Hosta sp.) 'Gold Standard'	Field Container	Fraelich	GA	2006	Over the top	Severe injury at all rates; severe growth reduction at 2X and 4X rates
25009	Sulfentrazone 0.2G (Sulfentrazone)	Plantain Lily (Hosta sp.) H, plantaginea 'Royal Standard'	Field Container	Gilliam	AL	2006	Over the top	Slight to moderate injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre), and there was a reduction in plant size.
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. cornuta 'bufordii nana'	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. cornuta 'Carissa'	Field Container	Fraelich	GA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre).
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. crenata 'Compacta'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. crenata 'Green Lustre'	Field Container	Norcini	FL	2005		Very slight injury at all rates, but no impact on marketability (0.125, 0.25, 0.5 lb ai per acre).
26582	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. rotunda	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. x meserveae 'Blue Prince'	Field Container	Mathers (OSU)	OH	2006	Over the top	No injury at any rate (0.125, 0.25, 0.5 lb ai per acre).
24531	Sulfentrazone 0.2G (Sulfentrazone)	Holly (Ilex sp.) I. x meserveae 'Blue Princess'	Field Container	Altland	OR	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25427	Sulfentrazone 0.2G (Sulfentrazone)	Yaupon (Ilex vomitoria)	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, 0.5 lb ai per acre.
25427	Sulfentrazone 0.2G (Sulfentrazone)	Yaupon (Ilex vomitoria)	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
26576	Sulfentrazone 0.2G (Sulfentrazone)	Anise Tree (Illicium sp.) I. parviflorum	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
24532	Sulfentrazone 0.2G (Sulfentrazone)	Juniper (Juniperus sp.) J. conferta 'Blue Pacific'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
24532	Sulfentrazone 0.2G (Sulfentrazone)	Juniper (Juniperus sp.) J. horizontalis 'Wiltonii'	Field Container	Fraelich	GA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre).
26561	Sulfentrazone 0.2G (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
26621	Sulfentrazone 0.2G (Sulfentrazone)	Crape Myrtle (Lagerstroemia indica) L. x Tuscarora	Field Container	Neal	NC	2006	Over the top	No injury at 0.125, 0.25, and 0.5 lb ai per acre.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25379	Sulfentrazone 0.2G (Sulfentrazone)	Lantana (Lantana sp.)	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25364	Sulfentrazone 0.2G (Sulfentrazone)	Lily, Easter; Trumpet Lily (Lilium longiflorum) 'Nellie White'	Field Container	Lieth	CA	2006	Over the top	Unacceptable injury and growth reduction at 0.125, 0.25 and 0.50 lb ai per acre
24745	Sulfentrazone 0.2G (Sulfentrazone)	Lilyturf (Liriope sp.) L. muscari variegata	Field Container	Neal	NC	2006	Over the top	Slight transient injury at 0.125 lb ai per acre and moderate unacceptable injury at 0.25 and 0.5 lb ai per acre.
24745	Sulfentrazone 0.2G (Sulfentrazone)	Lilyturf (Liriope sp.) L. muscari variegata 'Aztec'	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
24745	Sulfentrazone 0.2G (Sulfentrazone)	Lilyturf (Liriope sp.) L. muscari variegata 'Aztec'	Field Container	Derr	VA	2007	Over the top	Slight injury at 0.125, 0.25 and 0.5 lb ai per acre.
26557	Sulfentrazone 0.2G (Sulfentrazone)	Magnolia, Southern (Magnolia grandiflora)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25380	Sulfentrazone 0.2G (Sulfentrazone)	Mondo Grass; Lilyturf; Ker-Gawl (Ophiopogon sp.) O. japonicus variegata	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25381	Sulfentrazone 0.2G (Sulfentrazone)	Pentas (Pentas sp.) 'Ruby Red'	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25368	Sulfentrazone 0.2G (Sulfentrazone)	Spruce, Norway (Picea abies)	Field Container	Altland	OR	2006	Over the top	No injury at 0.125, 0.25, and 0.5 lb ai per acre.
25369	Sulfentrazone 0.2G (Sulfentrazone)	Plum (Prunus sp.) P. avium	Field Container	Altland	OR	2006	Over the top	No significant visible injury, but caliper was decreased at the two higher rates (0.125, 0.25, 0.5 lb ai per acre).
25924	Sulfentrazone 0.2G (Sulfentrazone)	Plum (Prunus sp.) P. serotina	Field In-Ground	Beste/Frank (ARS)	MD	2006	Over the top	Slight injury and growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); no reduction in seedling marketability
25357	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Altland	OR	2006	Over the top	No significant injury at 0.125, 0.25, and 0.5 lb ai per acre.
25357	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Boydston	WA	2006	Over the top	No injury or growth differences at 0.125, 0.25, and 0.5 lb ai per acre.
25357	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Boydston	WA	2007	Over the top	No injury or growth reduction at 0.125, 0.25 and 0.5 lb ai per acre
25357	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii)	Field Container	Lieth	CA	2007	Over the top	No significant injury at 0.125 and 0.25, but at 0.5 lb ai per acre chlorotic shoot tips and necrotic needles were observed.
25357	Sulfentrazone 0.2G (Sulfentrazone)	Fir, Douglas (Pseudotsuga menziesii) P. menziesii glauca	Field Container	Freiberger	NJ	2007	Over the top	Slight injury at 0.125, slight to moderate at 0.25 and 0.5 lb ai per acre
25460	Sulfentrazone 0.2G (Sulfentrazone)	Oak, Red (Quercus rubra)	Field Container	Altland	OR	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25919	Sulfentrazone 0.2G (Sulfentrazone)	Oak, Red (Quercus rubra)	Field In-Ground	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or plant size reduction at 0.125, 0.25 and 0.5 lb ai per acre; all plants marketable

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25460	Sulfentrazone 0.2G (Sulfentrazone)	Oak, Red (<i>Quercus rubra</i>)	Field Container	Fraelich	GA	2006	Over the top	Slight, transient injury only at 0.5 lb ai per acre rate with no growth reduction.
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Amelia Rose'	Field Container	Gilliam	AL	2007	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Congo'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Girard Rose'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Pink Gumpo'	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) R. catawbiense 'English Roseum'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
25935	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) R. x 'Roseum Elegans'	Field In-Ground	Mathers (OSU)	OH	2006	Over the top	Slight to moderate injury increasing with rate and with second application (0.125, 0.25, 0.5 lb ai per acre)
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) R. x 'Roseum Elegans'	Field Container	Mathers (OSU)	OH	2006	Over the top	Virtually no injury to slight injury increasing with rate (0.125, 0.25, 0.5 lb ai per acre).
25935	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) Rhododendron 'P.J.M.'	Field In-Ground	Ahrens/Mervosh	CT	2006	Over the top	No injury at 0.125 lb ai per acre, slight at 0.25 and 0.5 lb ai
24533	Sulfentrazone 0.2G (Sulfentrazone)	Azalea & Rhododendron (<i>Rhododendron</i> sp.) 'Tradition'	Field Container	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.)	Field Container	Senesac	NY	2006	Over the top	Virtually no injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.) 'Beloved'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.) 'Moonshadow'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.) 'Nearly Wild'	Field Container	Lieth	CA	2006	Over the top	Moderate, unacceptable injury and growth reduction at all rates; plants unmarketable (0.125, 0.25, 0.5 lb ai per acre).
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.) 'Oranges & Lemons'	Field Container	Mathers (OSU)	OH	2006	Over the top	Slight to moderate injury after first application with only very slight injury after second (0.125, 0.25, 0.5 lb ai per acre).
25360	Sulfentrazone 0.2G (Sulfentrazone)	Rose (<i>Rosa</i> sp.) 'Solstice'	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25370	Sulfentrazone 0.2G (Sulfentrazone)	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa) 'Becky'	Field Container	Derr	VA	2006	Over the top	No significant injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25370	Sulfentrazone 0.2G (Sulfentrazone)	Coneflower, Orange, var. speciosa (Rudbeckia fulgida var. speciosa) 'Viettas Little Suzie'	Field Container	Mathers (OSU)	OH	2006	Over the top	Very slight injury at 0.125 lb ai per acre even with second application; moderate, transient injury at 0.25 lb ai per acre; and moderate persisting injury with 0.5 lb ai per acre.
25371	Sulfentrazone 0.2G (Sulfentrazone)	Woodland Sage (Salvia x sylvestris) S. elegans 'Tangerine'	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25371	Sulfentrazone 0.2G (Sulfentrazone)	Woodland Sage (Salvia x sylvestris) S. nemorosa 'May Night'	Field Container	Lieth	CA	2006	Over the top	No significant injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25371	Sulfentrazone 0.2G (Sulfentrazone)	Woodland Sage (Salvia x sylvestris) S. nemorosa 'Snow Hill'	Field Container	Boydston	WA	2006	Over the top	Minor injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) 'Goldflame'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	Significant injury after the 1st but not after the 2nd application at all rates (0.125, 0.25 and 0.5 lb ai per acre)
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. bumalda 'Anthony Waterer'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. decumbens	Field Container	Senesac	NY	2006	Over the top	No injury at 0.125 lb ai per acre; very slight, transient injury at 0.25 and 0.5 lb ai per acre after second application
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. japonica 'Little Princess'	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. x bumalda 'Gold Mound'	Field Container	Derr	VA	2006	Over the top	No injury at all rates (0.125, 0.25, 0.5 lb ai per acre)
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. x bumalda 'Goldmound'	Field Container	Mathers (OSU)	OH	2006	Over the top	Slight transient injury at all rates (0.125, 0.25, 0.5 lb ai per acre).
25361	Sulfentrazone 0.2G (Sulfentrazone)	Bridal-Wreath (Spiraea sp.) S. x bumalda 'Goldmound'	Field Container	Mathers (OSU)	OH	2006	Over the top	Very slight transient injury at high rate only (0.125, 0.25, 0.5 lb ai per acre)
26553	Sulfentrazone 0.2G (Sulfentrazone)	Bald Cypress (Taxodium distichum)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25362	Sulfentrazone 0.2G (Sulfentrazone)	Red Cedar, Arborvitae (Thuja sp.) 'Emerald Green'	Field Container	Ahrens/Mervosh	CT	2006	Over the top	No injury at all rates (0.125, 0.25 and 0.5 lb ai per acre)
26566	Sulfentrazone 0.2G (Sulfentrazone)	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25362	Sulfentrazone 0.2G (Sulfentrazone)	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Elegantissima'	Field Container	Czarnota	OH	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.

PR#	Product (Active Ingredients)	Crop	Production Site	Researcher	State	Year	Application Type	Results
25362	Sulfentrazone 0.2G (Sulfentrazone)	Red Cedar, Arborvitae (Thuja sp.) T. occidentalis 'Emerald Green'	Field Container	Lieth	CA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre)
25356	Sulfentrazone 0.2G (Sulfentrazone)	Jasmine, Asian Star (Trachelospermum asiaticum)	Field Container	Gilliam	AL	2006	Over the top	No injury or growth reduction at 0.125, 0.25, and 0.5 lb ai per acre.
25356	Sulfentrazone 0.2G (Sulfentrazone)	Jasmine, Asian Star (Trachelospermum asiaticum) 'Green'	Field Container	Fraelich	GA	2006	Over the top	No injury or growth reduction at all rates (0.125, 0.25, 0.5 lb ai per acre)
26570	Sulfentrazone 0.2G (Sulfentrazone)	Palm, Chinese Windmill (Trachycarpus fortunei)	Field In-Ground	Czarnota	GA	2006	Over the top	No injury at 0.25 and 0.38 lb ai per acre.
25451	Sulfentrazone 0.2G (Sulfentrazone)	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) 'Autum Jazz'	Field Container	Altland	OR	2006	Over the top	No significant injury at any rate (0.125, 0.25, 0.5 lb ai per acre).
25451	Sulfentrazone 0.2G (Sulfentrazone)	Southern Arrowwood; Arrowwood Viburnum (Viburnum dentatum) 'Chicago Lustre'	Field Container	Beste/Frank (ARS)	MD	2006	Over the top	No significant injury or growth reduction at all rates (0.125, 0.25 and 0.5 lb ai per acre); all plants marketable
26501	Sulfentrazone 0.2G (Sulfentrazone)	Arrowwood (Viburnum sp.) V. carlesii	Field Container	Altland	OR	2006	Over the top	No significant injury at any rate (0.125, 0.25, 0.5 lb ai per acre).
26501	Sulfentrazone 0.2G (Sulfentrazone)	Arrowwood (Viburnum sp.) V. tinus compacta	Field Container	Neal	NC	2006	Over the top	No significant injury at 0.125, 0.25, 0.5 lb ai per acre.
25018	Sulfentrazone 0.2G (Sulfentrazone)	Periwinkle (Vinca sp.) V. minor	Field Container	Freiberger	NJ	2007	Over the top	No injury at 0.125 and 0.25 lb ai per acre, slight injury at 0.5 lb only after 2nd application
25018	Sulfentrazone 0.2G (Sulfentrazone)	Periwinkle (Vinca sp.) Vinca minor 'Bowles'	Field Container	Lieth	CA	2006	Over the top	Not possible to determine if product caused injury as untreated plants showed substantial injury
12110	Sulfentrazone 75DF (Sulfentrazone)	Yew (Taxus sp.) T. cuspidata	Field In-Ground	Ahrens	CT	1996	Over the top	No injury at 0.125, 0.25, and 0.275 lb ai per acre.
12110	Sulfentrazone 75DF (Sulfentrazone)	Yew (Taxus sp.) T. cuspidata	Field In-Ground	Ahrens/Mervosh	CT	1995	Over the top	No injury at 0.125, 0.25, and 0.275 lb ai per acre.
12110	Sulfentrazone 75DF (Sulfentrazone)	Yew (Taxus sp.) T. cuspidata 'capitata'	Field In-Ground	Ahrens	CT	1996	Over the top	No injury at 0.125, 0.25, and 0.275 lb ai per acre.
12110	Sulfentrazone 75DF (Sulfentrazone)	Yew (Taxus sp.) T. cuspidata 'capitata'	Field In-Ground	Ahrens/Mervosh	CT	1997	Over the top	No injury at 0.125, 0.25, and 0.275 lb ai per acre.
12111	Sulfentrazone 75DF (Sulfentrazone)	Hemlock (Tsuga sp.) T. canadensis	Field In-Ground	Ahrens	CT	1996	Over the top	Minor injury to hemlock tips. NOTE: this trial used Spartan 75DF.
12111	Sulfentrazone 75DF (Sulfentrazone)	Hemlock (Tsuga sp.) T. canadensis	Field In-Ground	Ahrens/Mervosh	CT	1995	Over the top	Minor injury to hemlock tips. NOTE: this trial used Spartan 75DF.

Label Suggestions

For Sulfentrazone 4F, it is suggested that the initial label be quite restrictive with over-the-top applications along with fully listing those species exhibiting sensitivity to treatment. The following species should be added to the label for those materials grown in containers:

Abies fraseri

Buxus sp.

Ilex vomitoria 'nana'

Juniperus horizontalis

Rosa sp.

Thuja sp.

For Sulfentrazone 0.2G, it is suggested that all 23 crop genera or species exhibiting no injury in the testing with Sulfentrazone 0.2G be placed on this label with over-the-top applications.

Abies fraseri

Acer rubrum

Buxus microphylla

Chamaebatiaria sp.

Delosperma sp.

Gardenia augusta radicans

Helleborus niger

Quercus rubra

Rhododendron sp.

Rosa sp. (See Lieth 2006)

Spiraea x bumalda

Thuja occidentalis

In addition, adding the following species and genera to the label can be considered even though there are fewer than three sites because of the breadth of species treated or that applications with Sulfentrazone 4F did not cause phytotoxicity.

*Euonymus alatus*²

*Euonymus japonicus*²

*Euonymus patens*²

*Ilex cornuta*²

*Ilex crenata*²

*Ilex rotunda*²

*Ilex x meserveae*²

*Ilex vomitoria 'nana'*²

Juniperus horizontalis

*Spiraea decumbent s*²

*Spiraea japonica*²

*Viburnum carlesii*²

*Viburnum tinus*²

It is also suggested that growers be cautioned not to use Sulfentrazone 0.2G over the top of the following three crops: *Canna sp.*, *Echinacea purpurea*, and *Hosta sp.*

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