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IR-4 Ornamental Horticulture Program Prodiamine Crop Safety

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Abstract

Prodiamine has been registered in the United States for many years for uses in and around ornamental plants in production nurseries and in landscapes. There have been several label amendments expanding the list of ornamental plants where prodiamine formulations can be used. Since 1977, the IR-4 Project has conducted over 525 trials using granular, wettable powder, wettable dry granular and emulsifiable concentrate formulations. This is the first summary across all the available data generated through IR-4.

The marketplace contains multiple brands of prodiamine with similar formulations. This report is written to support amending any prodiamine label, so prodiamine will be used throughout instead of trade names with the exception of the specific products and formulations tested as referred to in Tables 4 and 5.

One hundred twenty plant species or genera exhibited no or minimal, transitory phytotoxicity to applications of WDG, WP and EC formulations. Of these, 52 species or genera are not currently on prodiamine WDG labels. It is recommended that 32 of these be placed on these labels along with moving 12 species from the portion of the label excluding use in CA to the portion of the label including use in CA. With additional data demonstrating no or minimal transient phytotoxicity, it is recommended the remaining 19 species also be added.

Twenty two species or genera exhibited no phytotoxicity at a 1X rate of the WDG, WP or EC formulations, but at higher rates there was some damage. Since some of the data was generated with EC and wettable powder formulations along with wettable dry granular formulations, it is recommended additional research be conducted on these species.

Only 8 species (*Ajuga sp.*, *Carex pennsylvanica*, *Ilex x meserveae*, *Limonium sp.*, *Petunia x hybrida*, *Sedum spurium*, *Viola tricolor*, and *Zinnia sp.*) demonstrated significant phytotoxicity even at a low label rate.

Forty-six plant species or genera exhibited no or minimal transitory phytotoxicity to applications of prodiamine G formulations. Of these 6 are not currently listed on prodiamine G labels. It is recommended that these be placed on the labels.

Only 2 crops (*Cortaderia* and *Leucanthemum maximum*) exhibited significant damage after prodiamine G applications.

Introduction

Prodiamine has been registered in the United States for many years for uses in and around ornamental plants in production nurseries and in landscapes. There have been several label amendments expanding the list of ornamental plants where prodiamine formulations can be used. Since 1977, the IR-4 Project has conducted over 525 trials using granular, wettable powder, and wettable dry granular formulations. This is the first summary across all the available data generated through IR-4. While prodiamine labels are fairly broad with many listed crops, this document will lead to amendments placing new crops on these labels.

The marketplace contains multiple brands of prodiamine with similar formulations. This report is written to support amending any prodiamine label, so prodiamine will be used throughout instead of trade names with the exception of the specific products and formulations tested as referred to in Tables 4 and 5.

Materials and Methods

Because this research was conducted over a wide time frame, application rates and whether repeat applications were made varied. Rates ranged from 0.375 to 16 lb ai per acre and number of applications varied from 1 to 5.

Prodiamine G, E, WP and WDG was supplied to researchers (See list of researchers in Appendix 2) by several companies including Borax USA, Sandoz Agro, and Syngenta.

Results and Summary

Based on the type and nature of injury seen with prodiamine applications, tested plant species were placed into three 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 these prodiamine formulations.

Phytotoxicity of Prodiamine WDG, WP and E Formulations

In general, prodiamine WDG, WP or E formulations exhibited no or minimal negative impact on a wide range of plant species (Table 1). One hundred twenty plant genera or species fell into this category. 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 22 crop species, there was no or little injury exhibited at the 1.5 lb ai per acre rate, but significant phytotoxicity occurred at the 3.0 lb ai per acre or higher rates (Table 2). Of this set, for 4 species single applications appeared to not cause harm, but damage was seen after the second application.

Since 1978 only 8 crops exhibited sufficient damage to not recommend prodiamine WDG/WP/E use either as over the top or soil broadcast applications: *Ajuga sp.*, *Carex pennsylvanica*, *Ilex x meserveae*, *Limonium sp.*, *Petunia x hybrida*, *Sedum spurium*, *Viola tricolor*, and *Zinnia sp.* (Table 3).

Please see Table 6 for a list of research on the wettable dry granular, wettable powder and liquid formulations of prodiamine and a summary of the individual trial results.

Phytotoxicity of Prodiamine G Formulations

In general, prodiamine G formulations exhibited no or minimal negative impact on a wide range of plant species (Table 4). Forty-six plant genera or species fell into this category. 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.

Since 1978 only 3 crops exhibited sufficient damage to not recommend prodiamine use either as over the top or soil broadcast applications: *Cortaderia sp.* and *Leucanthemum maximum* (Table 5).

Please see Table 7 for a list of research on the granular formulations of prodiamine and a summary of the individual trial results.

Table 1. List of prodiamine 2E, 50WP and 65WG treated crops with no or minimal transitory injury.

<i>Acer saccharum</i>	<i>Euonymus japonica</i>	<i>Pieris compacta</i>
<i>Acer sp.</i>	<i>Euonymus fortunei</i>	<i>Pinus strobus</i>
<i>Achillea millefolium</i>	<i>Euonymus macrophylla</i>	<i>Pinus sylvestris</i>
<i>Agapanthus africanus</i>	<i>Forsythia sp.</i>	<i>Pinus thunbergii</i>
<i>Agastache rupestris</i>	<i>Geum sp.</i>	<i>Pittosporum tobira</i>
<i>Ageratum houstonianum</i>	<i>Goniolimon tataricum</i>	<i>Podocarpus macrophylla</i>
<i>Amsonia hubrichtii</i>	<i>Gypsophila elegans</i>	<i>Pseudotsuga menziesii</i>
<i>Antirrhinum majus</i>	<i>Hedera helix</i>	<i>Pyracantha coccinea</i>
<i>Aquilegia sp.</i>	<i>Hemerocallis sp. (See Fraelich)</i>	<i>Pyracantha fortuneana</i>
<i>Arctotheca calendula</i>	<i>Hibiscus rosa-sinensis</i>	<i>Quercus rubra</i>
<i>Aristida stricta</i>	<i>Hosta fortunei</i>	<i>Quercus borealis</i>
<i>Artemisia lactiflora</i>	<i>Hosta undulate</i>	<i>Rhamnus smithii</i>
<i>Asclepias sp.</i>	<i>Ilex crenata (See Glaze)</i>	<i>Rhododendron formosa</i>
<i>Asparagus virgatus</i>	<i>Jasminium nudiflorum</i>	<i>Rhododendron obtusum</i>
<i>Aspidistra elatior</i>	<i>Juniperus chinensis</i>	<i>Rhododendron catawbiense</i>
<i>Aubrieta deltoidea</i>	<i>Juniperus horizontalis</i>	<i>Rhododendron chionoides</i>
<i>Aurinia saxatilis</i>	<i>Juniperus conferta</i>	<i>Rumohra adiantiformis</i>
<i>Begonia sp.</i>	<i>Justicia brandegeana</i>	<i>Ruscus hypophyllum</i>
<i>Berberis thunbergii</i>	<i>Lantana sp.</i>	<i>Salvia daghestanica</i>
<i>Berberis julianae</i>	<i>Leucanthemum maximum</i>	<i>Salvia x sylvestris</i>
<i>Berberis verruculosa</i>	<i>Liatris sp.</i>	<i>Scutellaria racemosa</i>
<i>Berberis mentorensis</i>	<i>Ligustrum sp.</i>	<i>Sedum spectabile</i>
<i>Brassica oleracea</i>	<i>Lilium sp.</i>	<i>Spirea japonica</i>
<i>Buddleia alternifolia</i>	<i>Liriope muscari</i>	<i>Syzygium pauculatum</i>
<i>Buddleia davidii</i>	<i>Liriope spicata</i>	<i>Tagetes erecta</i>
<i>Centaurea gymnocarpa</i>	<i>Liriope sp.</i>	<i>Tagetes patula</i>
<i>Ceratium tomentosum</i>	<i>Lobelia erinus (See Kraus)</i>	<i>Tagetes sp.</i>
<i>Chrysalidocarpus lutescens</i>	<i>Lonicera japonica</i>	<i>Taxus x media</i>
<i>Colchicum sp.</i>	<i>Magnolia grandiflora</i>	<i>Taxus cuspidata</i>
<i>Cornus alternifolia</i>	<i>Magnolia x soulangiana</i>	<i>Thuja occidentalis</i>
<i>Cornus stolonifera</i>	<i>Malus sp.</i>	<i>Thymus serpyllum</i>
<i>Cornus florida</i>	<i>Malus sieboldii</i>	<i>Trachelospermum jasminoides</i>
<i>Cotoneaster glacophylla</i>	<i>Nandina domestica</i>	<i>Trifolium repens</i>
<i>Cotoneaster dammeri</i>	<i>Narcissus sp.</i>	<i>Tsuga canadensis</i>
<i>Cotoneaster microphylla</i>	<i>Oenothera fruticosa</i>	<i>Veronica repens</i>
<i>Cupressus sempervirens</i>	<i>Oenothera pallida</i>	<i>Viburnum plicatum</i>
<i>Cytisus purgans</i>	<i>Origanum libanoticum</i>	<i>Viburnum lantana</i>
<i>Dendranthemum sp.</i>	<i>Pelargonium x hortorum</i>	<i>Viburnum wrightii</i>
<i>Diascia intergerrima</i>	<i>Perovskia atriplicifolia</i>	<i>Viola x wittrockiana</i>
<i>Digitalis sp.</i>	<i>Phoenix roebelinii</i>	<i>Washingtonia robusta</i>
<i>Dodonea cuneata</i>	<i>Photinia sp.</i>	<i>Yucca filamentosa</i>
<i>Erigeron karvinskianus</i>	<i>Picea sp.</i>	<i>Zauschneria californica</i>
<i>Eryngium planum</i>		

Table 2. List of prodiamine 2E, 50WP and 65WG treated crops with no or minimal transitory injury seen at the 1X rate, but the 2X or 4X rate did cause significant phytotoxicity

<i>Astilbe sp.</i>	<i>Cotoneaster salicifolius</i>	<i>Lantana montevidensis</i>
<i>Aucuba sp.</i>	<i>repandens</i>	<i>Lysimachia punctata</i>
<i>Buxus sp. *</i>	<i>Cuphea hyssopifolia</i>	<i>Mentha x piperita</i>
<i>Callistephus chinensis</i>	<i>Delphinium sp.</i>	<i>Physostegia virginiana</i>
<i>Cleyera japonica *</i>	<i>Dicentra sp.</i>	<i>Rosa chinensis minima</i>
<i>Cortaderia *</i>	<i>Euonymus kiautschovicus</i>	<i>Sequoia sempervirens</i>
<i>Cosmos sp.</i>	<i>Gardenia *</i>	<i>Silene caroliniana</i>
<i>Cotoneaster apiculata</i>	<i>Helichrysum bracteatum</i>	
	<i>Impatiens wallerana</i>	

* Single application might not have caused injury, but second application did at a number of sites.

Table 3. List of prodiamine 2E, 50WP and 65WG treated crops exhibiting significant injury.

<i>Ajuga sp.</i>	<i>Limonium sp.</i>	<i>Viola tricolor</i>
<i>Carex pennsylvanica</i>	<i>Petunia x hybrida</i>	<i>Zinnia sp.</i>
<i>Ilex x meserveae</i>	<i>Sedum spurium</i>	

Table 4. List of prodiamine G treated crops with no or minimal transitory injury.

<i>Acer sp.</i>	<i>Ilex sp.</i>	<i>Podocarpus macrophyllus</i>
<i>Ajuga reptans</i>	<i>Juniperus sp.</i>	<i>Pyracantha sp.</i>
<i>Aucuba sp.</i>	<i>Lagerstroemia indica</i>	<i>Quercus sp.</i>
<i>Begonia sp.</i>	<i>Ligustrum sp.</i>	<i>Rhododendron sp.</i>
<i>Buxus sp.</i>	<i>Liriope sp.</i>	<i>Rosa sp.</i>
<i>Calluna sp.</i>	<i>Lonicera sp.</i>	<i>Salvia splendens</i>
<i>Cleyera japonica</i>	<i>Malus sp.</i>	<i>Sedum sp.</i>
<i>Cornus florida</i>	<i>Nandina domestica</i>	<i>Tagetes sp.</i>
<i>Cornus sp.</i>	<i>Oxydendrum arboreum</i>	<i>Taxus sp.</i>
<i>Cotoneaster sp.</i>	<i>Pachysandra terminalis</i>	<i>Thuja sp.</i>
<i>Elaeagnus angustifolia</i>	<i>Pelargonium sp.</i>	<i>Tsuga sp.</i>
<i>Euonymus sp.</i>	<i>Photinia sp.</i>	<i>Viburnum sp.</i>
<i>Fatsia sp.</i>	<i>Picea sp.</i>	<i>Vinca sp.</i>
<i>Forsythia sp.</i>	<i>Pieris japonica</i>	<i>Weigela sp.</i>
<i>Gardenia sp.</i>	<i>Pinus sp.</i>	
<i>Hedera helix L. ssp. Helix</i>	<i>Pittosporum</i>	

Table 5. List of prodiamine G treated crops exhibiting significant injury.

Cortaderia sp.

Leucantheum maximum

Table 6. Detailed Summary of Crop Safety Testing with Liquid, Wettable Granular and Wettable Powder Formulations of Prodiamine

Notes: Table entries are sorted by crop Latin name. Only prodiamine reports received by 10/1/2006 are included in this table.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
09235	Barricade 65WG	Maple	<i>Acer sp.</i>	A. saccharum	Field Container	Buriff	1996	Broadcast, ground	No injury.
07374	Rydex 50WP	Maple	<i>Acer sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
12407	Factor 65WG	Yarrow	<i>Achillea millefolium</i>	'Pink Deb'	Field Container	Fare	1997	Foliar	No injury.
12407	Factor 65WG	Yarrow	<i>Achillea millefolium</i>	'Cerise Queen'	Field Container	Senesac	1997	Over the top	No significant injury; no weeds present at time of application
12407	Factor 65WG	Yarrow	<i>Achillea millefolium</i>	'Cloth of Gold'	Field Container	Ahrens	1998	Over the top	No injury.
11440	Barricade 65WG	Yarrow	<i>Achillea millefolium</i>		Field In-Ground	Elmore	1993	Directed	No significant injury at 0.75 and 1.5 lb ai per acre; week control was not satisfactory.
18726	Rydex 50WP	Lily-Of-The-Nile	<i>Agapanthus sp.</i>	A. africanus	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
18720	Barricade 65WG	Hyssop, Sunset;Giant	<i>Agastache rupestris</i>		Field Container	Klett	1999	Over the top	No significant injury; good weed control at both rates
18720	Barricade 65WG	Hyssop, Sunset;Giant	<i>Agastache rupestris</i>		Field Container	Klett	2000	Over the top	No significant injury; good weed control
13191	Factor 65WG	Ageratum	<i>Ageratum sp.</i>	A. houstonianum 'Blue Horizon'	Field In-Ground	Senesac	1997	Over the top	No significant injury; excellent control of common purslane and annual grasses.
09723	Barricade 65WG	Bugleweed	<i>Ajuga sp.</i>	A. reptans	Field In-Ground	Derr	1995	Over the top	Moderate injury increasing with rate (2.0, 4.0, 8.0 lb ai per acre); excellent control of large crabgrass, carpetweed and yellow woodsorrel.
12408	Factor 65WG	Bluestar	<i>Amsonia sp.</i>	A. hubrichtii	Field Container	Senesac	1998	Over the top	No significant injury.
13193	Factor 65WG	Snapdragon	<i>Antirrhinum majus</i>	'Rocket Rose'	Field In-Ground	Senesac	1997	Over the top	No significant injury; excellent control of common purslane and annual grasses.
20159	Barricade 65WG	Columbine	<i>Aquilegia sp.</i>	'Dragonfly'	Field Container	Ahrens	1998	Broadcast	Very slight injury.
26375	Rydex 50WP	Cape Weed	<i>Arctotheca calendula</i>		Field In-Ground	Elmore	1977		No significant injury; excellent efficacy of rough pigweed and prostrate pigweed.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
13245	Barricade 65WG	Grass	<i>Aristida stricta</i>	'Pineland 3 Awn'	Turf	Norcini	1998	Over the top	Monticello location: No significant injury.
13245	Barricade 65WG	Grass	<i>Aristida stricta</i>	'Pineland 3 Awn'	Turf	Norcini	1998	Over the top	Chiefland location: No significant injury.
22951	Barricade 65WG	Mugwort, White	<i>Artemisia lactiflora</i>	'Guizho'	Field Container	Klett	2002		Trial 1: No significant phytotoxicity; good weed control
22951	Barricade 65WG	Mugwort, White	<i>Artemisia lactiflora</i>	'Guizho'	Field Container	Klett	2002		Trial 2: No significant phytotoxicity; good weed control
23477	Barricade 65WG	Butterfly Flower	<i>Asclepias sp.</i>	'Ice Ballet'	Field Container	Senesac	2002	Over the top	No significant phytotoxicity
11282	Barricade 65WG	Fern, Tree	<i>Asparagus virgatus</i>		Field In-Ground	Stamps	1992	Ground spray	No significant injury; excellent weed control
11281	Barricade 65WG	Cast-Iron Plant, Ker-Gawl	<i>Aspidistra elatior</i>		Field In-Ground	Stamps	1992	Ground spray	No significant injury; good to excellent weed control
12440	Factor 65WG	False Spirea	<i>Astilbe sp.</i>		Field Container	Senesac	1996	Over the top	Virtually no injury at 1.5 and 3.0 lb ai per acre, but extensive injury occurred at 6.0 lb/A rate.
12440	Factor 65WG	False Spirea	<i>Astilbe sp.</i>		Field Container	Senesac	1997	Over the top	No significant injury; no weeds present at time of application
12440	Factor 65WG	False Spirea	<i>Astilbe sp.</i>	A. x aren 'Gloria Purpurea'	Field Container	Ahrens	1998	Broadcast	No injury at 0.75 and 1.5 lb ai per acre, slight injury at 3.0 lb ai per acre.
22999	Barricade 65WG	Rock Cress	<i>Aubrieta sp.</i>	A. deltoidea	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
06610	Rydex 50WP	Aucuba	<i>Aucuba sp.</i>		Field Container	Glaze	1978	Injection	Slight injury increasing with rate
06875	Rydex 2 E	Aucuba	<i>Aucuba sp.</i>		Field Container	Glaze	1979	Injection	Slight injury increasing with rate.
23000	Barricade 65WG	Basket-Of-Gold	<i>Aurinia saxatilis</i>	'Gold Dust'	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
09711	Factor 65WG	Begonia	<i>Begonia sp.</i>	B. semperflorens-cultorum	Field Container	Buriff	1996		No significant injury.
09711	Factor 65WG	Begonia	<i>Begonia sp.</i>	'Vodka'	Field Container	Buriff	1997		No significant injury.
09270	Barricade 65WG	Barberry	<i>Berberis sp.</i>	B. thunbergii 'Atropurpurea'	Field Container	Buriff	1996	Broadcast, ground	No significant injury.
07822	Rydex 50WP	Barberry	<i>Berberis sp.</i>	B. julianae	Field In-Ground	Haramaki	1979	Over the top	No injury; good control of grasses and broadleaved weeds.
07822	Rydex 50WP	Barberry	<i>Berberis sp.</i>	B. verruculosa	Field In-Ground	Haramaki	1979	Over the top	No injury; good control of grasses and broadleaved weeds.
07822	Rydex 50WP	Barberry	<i>Berberis sp.</i>	B. mentorensis	Field In-Ground	Haramaki	1979	Over the top	No injury; good control of grasses and broadleaved weeds.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
13266	Factor 65WG	Ornamental Cabbage, Ornamental Kale	<i>Brassica sp.</i>	B. oleracea 'Nagoya White' Kale	Field Container	Senesac	1998	Over the top	No significant injury.
13266	Factor 65WG	Ornamental Cabbage, Ornamental Kale	<i>Brassica sp.</i>	B. oleracea 'Nagoya Red' Kale	Field Container	Senesac	1998	Over the top	No significant injury.
13266	Factor 65WG	Ornamental Cabbage, Ornamental Kale	<i>Brassica sp.</i>	B. oleracea 'Dynasty Red' Cabbage	Field Container	Senesac	1998	Over the top	No significant injury.
13266	Factor 65WG	Ornamental Cabbage, Ornamental Kale	<i>Brassica sp.</i>	B. oleracea 'Osaka Red' Cabbage	Field Container	Senesac	1998	Over the top	No significant injury.
13266	Factor 65WG	Ornamental Cabbage, Ornamental Kale	<i>Brassica sp.</i>	B. oleracea 'Osaka White' Cabbage	Field Container	Senesac	1998	Over the top	Slight reduction in fresh weight at 3.0 and 6.0 lb ai per acre.
20149	Barricade 65WG	Butterfly Bush, Silver	<i>Buddleia alternifolia</i>	'Argentea'	Field Container	Klett	2000	Over the top	No significant injury; significant weed control
20149	Barricade 65WG	Butterfly Bush, Silver	<i>Buddleia alternifolia</i>	'Argentea'	Field Container	Klett	2001	Over the top	No injury; significant weed control.
11663	Barricade 65WG	Butterfly Bush	<i>Buddleia davidii</i>	'White Bouquet'	Field Container	Norcini	1995	Over the top	No significant injury; some control of chamberbitter
11663	Barricade 65WG	Butterfly Bush	<i>Buddleia davidii</i>	'Nanho Blue'	Field Container	Beste	1996	Ground broadcast	No significant visible injury, but flowering was suppressed somewhat.
11663	Barricade 65WG	Butterfly Bush	<i>Buddleia davidii</i>		Field Container	Buriff	1997	Broadcast over soil surface	No significant injury.
06593	Rydex 50WP	Boxwood	<i>Buxus sp.</i>	B. sempervirens	Field Container	Elmore	1975	Over-the-top	Slight injury at 2 and 8 lb ai per acre; Good to excellent efficacy of spotted spurge and creeping woodsorrel, some efficacy on common groundsel.
06593	Rydex 50WP	Boxwood	<i>Buxus sp.</i>	B. microphylla	Field Container	Elmore	1975	Soil applied broadcast	No significant injury; some suppression of common groundsel with 2, 4, and 8 lb ai per acre.
06593	Rydex 50WP	Boxwood	<i>Buxus sp.</i>	B. japonica	Field Container	Elmore	1977	Broadcast spray, soil applied	Slight injury at 2, 4, and 8 lb ai per acre.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06593	Rydex 50WP	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1978	Injection	Slight injury increasing with rate.
06878	Rydex 2 E	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
13119	Barricade 65WG	China Aster	<i>Callistephus chinensis</i>	'Matsumoto Blue'	Field In-Ground	Senesac	1997	Over the top	Some early season injury; excellent control of common purslane and annual grasses.
23478	Barricade 65WG	Sedge	<i>Carex sp.</i>	C. pennsylvanica	Field Container	Senesac	2002	Over the top	A significant reduction in fresh weight was observed.
11839	Barricade 65WG	Dusty-Miller	<i>Centaurea gymnocarpa</i>	'Silverdust'	Field Container	Norcini	1993	Foliar	No injury.
11839	Barricade 65WG	Dusty-Miller	<i>Centaurea gymnocarpa</i>		Field Container	Buriff	1996	Broadcast, ground	No significant injury; no weeds present at time of application.
23001	Barricade 65WG	Snow-In-Summer	<i>Cerastium tomentosum</i>		Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
13438	Factor 65WG	Palm, Areca	<i>Chrysalidocarpus lutescens</i>		Field Container	Broschat	1998	Foliar spray	No significant injury; fair weed control
06615	Rydex 50WP	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1978	Injection	Very slight to slight injury increasing with rate.
06880	Rydex 2 E	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
09512	Barricade 65WG	Crocus	<i>Colchicum sp.</i>		Field Container	Buriff	1996	Broadcast	No injury.
13247	Factor 65WG	Dogwood, Pagoda; Green Osier	<i>Cornus alternifolia</i>		Field Container	Senesac	1997	Over the top	No significant injury.
26371	Rydex 50WP	Dogwood	<i>Cornus sp.</i>	C. stolonifera	Field Container	Williams (IL)	1978	Over the top	No injury; acceptable weed control
06618	Rydex 50WP	Dogwood	<i>Cornus sp.</i>	C. florida	Field In-Ground	Bing	1978	Over the top	No significant injury.
06618	Rydex 50WP	Dogwood	<i>Cornus sp.</i>	C. stolonifera	Field In-Ground	Bing	1978	Over the top	No significant injury.
06618	Rydex 50WP	Dogwood	<i>Cornus sp.</i>	C. stolonifera	Field In-Ground	Bing	1979	Directed	No significant injury.
04432	Rydex 50WP	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1978	Injection	Minor to moderate injury increasing with rate.
04432	Rydex 50WP	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1978	Injection	Very slight to slight injury increasing with rate.
04510	Rydex 2 E	Pampas Grass	<i>Cortaderia</i>		Field Container	Phatak	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
13121	Barricade 65WG	Cosmos	<i>Cosmos sp.</i>	C. binnateus 'Qis Rose'	Field In-Ground	Senesac	1997	Over the top	Slight injury was observed; excellent weed control
26369	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. glaucophylla	Field Container	Elmore	1975	Broadcast over the foliage	No significant injury; excellent control of italian ryegrass and creeping woodsorrel.

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		Common Name	Latin Name	Cultivar					
26369	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Lowfast'	Field Container	Ryan	1978	Directed	No significant injury
26369	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri	Field Container	Ticknor	1978		No injury
26369	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. apiculata	Field Container	Williams (IL)	1978	Over the top	Slight chlorosis and slight swelling of stem at soil line; good weed control
26369	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C dammeri 'Lowfast'	Field Container	Ryan	1979	Directed	No significant visible injury, but fresh weights were reduced; excellent control of barnyardgrass and bittercress.
07371	Barricade 65WG	Cotoneaster	<i>Cotoneaster sp.</i>	C. salicifolius repandens	Field Container	Senesac	1996	Over the top	No injury at 1.5 lb ai per acre, moderate injury at 3.0 and 6.0 lb ai per acre.
06462	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. microphylla	Field In-Ground	Haramaki	1979	Over the top	Slight injury only at highest rate (8 lb ai per acre); reasonably good weed control.
06462	Rydex 50WP	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Lowfast'	Field In-Ground	Kuhns	1979	Broadcast	No injury; marginally acceptable weed control.
11665	Barricade 65WG	Mexican Heather, False Heather, Elfin Herb	<i>Cuphea hyssopifolia</i>	'Desert Snow'	Field Container	Norcini	1995	Over the top	Slight delay of bloom; some control of chamberbitter.
09273	Rydex 50WP	Cypress	<i>Cupressus sp.</i>	C. sempervirens 'Glaucua'	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
20146	Barricade 65WG	Broom, Andorra	<i>Cytisus purgans</i>	'Spanish Gold'	Field Container	Klett	2000	Over the top	No significant injury; good weed control
13124	Barricade 65WG	Larkspur	<i>Delphinium sp.</i>	D. x elatum 'Pacific Hybrid Giants'	Field Container	Senesac	1996	Over the top	Significant injury at 3.0 and 6.0 lb ai per acre rates.
13125	Factor 65WG	Larkspur	<i>Delphinium sp.</i>	D. x cultorum 'Magic Rountain Sky Blue w/White'	Field In-Ground	Senesac	1997	Over the top	Moderate injury was observed; excellent weed control
13125	Factor 65WG	Larkspur	<i>Delphinium sp.</i>	D. elatum 'Pacific Giant Galahad'	Field In-Ground	Senesac	1997	Over the top	Moderate injury was observed; excellent weed control
11634	Barricade 65WG	Chrysanthemu m	<i>Dendranthema sp.</i>	'Debonair'	Field Container	Buriff	1996	Broadcast	No significant injury; no weeds present at time of application
11634	Barricade 65WG	Chrysanthemu m	<i>Dendranthema sp.</i>	D. x grandiflorum 'Linda'	Field Container	Senesac	1998	Broadcast	No significant injury.

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		Common Name	Latin Name	Cultivar					
11634	Barricade 65WG	Chrysanthemum	<i>Dendranthema sp.</i>	D. x grandiflorum 'Jennifer'	Field Container	Senesac	1998	Broadcast	No significant injury.
11634	Barricade 65WG	Chrysanthemum	<i>Dendranthema sp.</i>	D. x grandiflorum 'Lisa'	Field Container	Senesac	1998	Broadcast	No significant injury.
18721	Barricade 65WG	Twinspur	<i>Diascia integerrima</i>		Field Container	Klett	1999	Over the top	No significant injury; good weed control at both rates
18721	Barricade 65WG	Twinspur	<i>Diascia integerrima</i>	'Coral Canyon'	Field Container	Klett	2000	Over the top	No significant injury; good weed control
13268	Factor 65WG	Bleeding Heart	<i>Dicentra sp.</i>		Field Container	Senesac	1998	Broadcast	Some injury at the 3.0 & 6.0 lb/A rate.
12174	Factor 65WG	Foxglove	<i>Digitalis sp.</i>	D. purpurea 'Excelsior'	Field Container	Senesac	1996	Over the top	No significant injury.
12174	Factor 65WG	Foxglove	<i>Digitalis sp.</i>		Field Container	Talbert	1998	Foliar broadcast	No injury.
09275	Rydex 50WP	Hopbush	<i>Dodonaea cuneata</i>	'Purpurea'	Field Container	Elmore	1977	Broadcast spray, soil applied	No injury.
23002	Barricade 65WG	Fleabane	<i>Erigeron sp.</i>	E. karvinskianus 'Blutenmeer'	Field Container	Senesac	2002	Over the top	No injury.
13269	Factor 65WG	Sea Holly	<i>Eryngium maritimum</i>	E. planum	Field Container	Senesac	1998	Broadcast	No significant injury.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. japonica 'Aureo-variegata'	Field Container	Elmore	1977		Very slight initial injury with 2 and 4 lb ai per acre; Significant injury observed 6 months after treatment, however weeded control also exhibited significant injury.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. japonica	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'Emerald Cushion'	Field Container	Ryan	1978	Directed spray	No visible injury or reduction in fresh weight.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. microphylla variegata	Field Container	Ticknor	1978		No injury.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'Vegeta'	Field Container	Williams (IL)	1978	Over the top	Slight chlorosis of young leaves; excellent weed control.
06605	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'Emerald Cushion'	Field Container	Ryan	1979	Directed	No significant injury; excellent control of barnyardgrass and bittercress.
06606	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei	Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.

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		Common Name	Latin Name	Cultivar					
06606	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei	Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06606	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. kiautschovicus	Field In-Ground	Haramaki	1979	Over the top	Moderate to severe injury; reasonably good control.
06606	Rydex 50WP	Euonymus	<i>Euonymus sp.</i>	E. fortunei colorata	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
06611	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>	F. 'Spring Glory'	Field Container	Ticknor	1978		No injury.
06611	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>	F. x intermedia	Field Container	Williams (IL)	1978	Over the top	No injury; acceptable preemergent weed control.
26413	Factor 65WG	Golden Bells	<i>Forsythia sp.</i>	F. x intermedia 'Lynwood Gold'	Field Container	Senesac	1996	Over the top	No significant injury.
26413	Factor 65WG	Golden Bells	<i>Forsythia sp.</i>	F. x intermedia 'Lynwood Gold'	Field Container	Senesac	1997	Over the top	No significant injury.
06612	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>	'Lynwood Gold'	Field In-Ground	Ahrens	1978	Over the top	No injury; excellent weed control
06612	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06612	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>		Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06612	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>	'Lynwood Gold'	Field In-Ground	Ahrens	1979	Over the top	No injury; excellent weed control.
06612	Rydex 50WP	Golden Bells	<i>Forsythia sp.</i>	F. x intermedia	Field In-Ground	Bing	1979	Directed	No significant injury.
06603	Rydex 50WP	Jasmine, Cape, Common Gardenia	<i>Gardenia sp.</i>		Field Container	Glaze	1978	Injection	Very slight to slight injury increasing with rate.
06885	Rydex 2 E	Jasmine, Cape, Common Gardenia	<i>Gardenia sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
11441	Barricade 65WG	Avens	<i>Geum sp.</i>		Field In-Ground	Elmore	1993	Broadcast	No significant injury; common chickweed control was good
13241	Barricade 65WG	German Statice	<i>Goniolimon tataricum</i>		Field In-Ground	Elmore	1993	Broadcast, ground	No significant injury; weed control was not satisfactory at 0.75 and 1.5 lb ai per acre.
11443	Barricade 65WG	Baby's-Breath	<i>Gypsophila elegans</i>	G. paniculata	Field In-Ground	Elmore	1994	Broadcast ground	No significant injury; poor control of shephards purse and rough pigweed.
06620	Rydex 50WP	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Elmore	1977		No significant injury; excellent efficacy of rough pigweed and prostrate pigweed.
06620	Rydex 50WP	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06620	Rydex 50WP	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06620	Rydex 50WP	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Williams (IL)	1978	Preplant	No significant injury; excellent weed control.

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13123	Factor 65WG	Strawflower	<i>Helichrysum bracteatum</i>	'Fireball'	Field In-Ground	Senesac	1997	Over the top	Some injury was observed; excellent weed control
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>	'Flames of Fantasy'	Field Container	Senesac	1994	Foliar	No injury.
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>	'Stella D'Oro'	Field Container	Buriff	1996	Broadcast, ground	No injury.
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>	'Sammy Russell'	Field Container	Fare	1996	Foliar	No significant injury; some control of crabgrass and spurge.
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>		Field Container	Fraelich	1996	Broadcast	Slight injury at 1.5 lb ai per acre; a few plants were unsaleable at the 3.0 and 6.0 rate; excellent weed control
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>	'Flames of Fantasy'	Field Container	Senesac	1996	Over the top	No injury.
09714	Factor 65WG	Daylily	<i>Heimerocallis sp.</i>	'Sammy Russell'	Field Container	Fare	1997	Foliar	No significant injury; excellent weed control
12932	Barricade 65WG	Mallow, Rose Mallow	<i>Hibiscus sp.</i>	H. rosa-sinensis 'Brilliant'	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
09715	Barricade 65WG	Lily, Plantain	<i>Hosta fortunei</i>	'August Moon'	Field Container	Senesac	1994	Foliar	No injury.
09715	Barricade 65WG	Lily, Plantain	<i>Hosta fortunei</i>	H. undulata	Field Container	Buriff	1996	Broadcast	No injury.
09715	Barricade 65WG	Lily, Plantain	<i>Hosta fortunei</i>	'August Moon'	Field Container	Senesac	1996	Over the top	No visible injury, but fresh weight was slightly suppressed.
12175	Barricade 65WG	Holly, Japanese	<i>Ilex crenata</i>	'Compacta'	Field Container	Gilliam	1997		No significant injury; excellent weed control
04475	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. cornuta 'Bufordii'	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
04475	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. crenata	Field Container	Glaze	1978	Injection	Slight injury increasing with rate.
04475	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. crenata 'Howardii'	Field Container	Ryan	1978	Directed	No significant injury.
04475	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. crenata convexa	Field Container	Ticknor	1978		No injury.
07363	Rydex 2 E	Holly	<i>Ilex sp.</i>	I. crenata	Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
04475	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. crenata 'Howardii'	Field Container	Ryan	1979	Directed	No significant injury; excellent control of barnyardgrass and bittercress.
06474	Rydex 50WP	Holly	<i>Ilex sp.</i>		Field In-Ground	Bing	1978	Over the top	Farmindale: No significant injury.
06474	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. crenata	Field In-Ground	Bing	1979	Directed	No significant injury.

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06474	Rydex 50WP	Holly	<i>Ilex sp.</i>	I. opaca	Field In-Ground	Haramaki	1979	Over the top	Very slight injury; reasonably good control.
12938	Barricade 65WG	Holly, Blue	<i>Ilex x meserveae</i>	'Blue Girl' and 'Blue Boy'	Field Container	Senesac	1996	Over the top	Moderate to significant injury exhibited 4 weeks after treatment, however fresh weights were not impacted.
09712	Barricade 65WG	Balsam	<i>Impatiens sp.</i>	I. wallerana 'Southeast Salmon Blush'	Field Container	Norcini	1993	Foliar	Some injury was observed.
07823	Barricade 65WG	Jasmine, Jessamine	<i>Jasminum sp.</i>	J. nudiflorum	Field In-Ground	Haramaki	1979	Over the top	No significant injury; reasonably good control.
06466	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. chinensis var chinensis 'Torulosa'	Field Container	Elmore	1977	Broadcast spray, soil applied	No injury.
06466	Rydex 50WP	Juniper	<i>Juniperus sp.</i>		Field Container	Glaze	1978	Injection	Slight injury increasing with rate.
06466	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field Container	Ticknor	1978	Soil surface	No injury.
06466	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. chinensis 'sargentii'	Field Container	Williams (IL)	1978	Over the top	Slight injury but not commercially significant; excellent weed control
26373	Rydex 2 E	Juniper	<i>Juniperus sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
07364	Barricade 65WG	Juniper	<i>Juniperus sp.</i>	J. conferta 'Blue Pacific'	Field Container	Norcini	1994	Over the top	No significant injury; control of florida betony was observed.
07364	Barricade 65WG	Juniper	<i>Juniperus sp.</i>	J. chinensis 'Parsonii'	Field Container	Norcini	1994	Over the top	No significant injury; control of florida betony was observed.
07364	Barricade 65WG	Juniper	<i>Juniperus sp.</i>	J. chinensis 'Hetzii glauca'	Field Container	Derr	1995	Over the top	No injury; excellent control of yellow foxtail.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. horizontalis andorra compacta	Field In-Ground	Ahrens	1978	Over the top	No injury; excellent weed control
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>		Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. horizontalis andorra compacta	Field In-Ground	Ahrens	1979	Over the top	No injury; excellent weed control.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field In-Ground	Bing	1979	Directed	No significant injury.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. horizontalis 'Plumosa';	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally adequate control.
06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>	J. chinensis 'Glauc Hetzii'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally adequate control.

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06473	Rydex 50WP	Juniper	<i>Juniperus sp.</i>		Field In-Ground	Talbert	1979	Over the top	No injury; poor to excellent control of pigweed and mediocre to good control of goosegrass and signalgrass.
26417	Rydex 50WP	Water Willow	<i>Justicia sp.</i>	J. brandegeana	Field Container	Elmore	1977	Broadcast spray, soil applied	No significant injury.
11661	Barricade 65WG	Trailing Lantana	<i>Lantana montevidensis</i>	'Lavender Weeping'	Field Container	Norcini	1995	Over the top	Slight, but transient, cupping of leaves and delay of bloom, but only significant damage at 6.0 lb ai per acre; some control of chamberbitter.
11659	Barricade 65WG	Shrub Verbena	<i>Lantana sp.</i>	L. camara 'Irene'	Field Container	Norcini	1995	Over the top	Slight delay of bloom and slight cupping of leaves, but no significant visible injury; partial control of chamber bitter
11659	Barricade 65WG	Shrub Verbena	<i>Lantana sp.</i>	'Homestead Pink'	Field Container	Gilliam	1997	Ground	No significant injury; good weed control.
11658	Barricade 65WG	Shasta Daisy	<i>Leucanthemum maximum</i>	'Marconi'	Field Container	Senesac	1994	Foliar	No significant injury.
11658	Barricade 65WG	Shasta Daisy	<i>Leucanthemum maximum</i>	'Alaska'	Field Container	Buriff	1996	Broadcast, ground	No significant injury; no weeds present at time of application
11658	Barricade 65WG	Shasta Daisy	<i>Leucanthemum maximum</i>		Field Container	Fare	1996	Foliar	Slight but transient stunting and leaf distortion; by 30 DAT all plants appeared healthy.
11658	Barricade 65WG	Shasta Daisy	<i>Leucanthemum maximum</i>	'Snow Lady'	Field Container	Fare	1997		Slight but transient stunting or distortion; by 60DAT all plants were marketable with no visible phytotoxicity
13270	Factor 65WG	Blazing-Star, Gayfeather	<i>Liatris sp.</i>		Field Container	Senesac	1998	Broadcast	No significant injury.
06595	Rydex 50WP	Privet	<i>Ligustrum sp.</i>		Field Container	Glaze	1978	Injection	None to slight injury increasing with rate
06595	Rydex 50WP	Privet	<i>Ligustrum sp.</i>	L. lucida	Field Container	Ticknor	1978		No injury.
06595	Rydex 50WP	Privet	<i>Ligustrum sp.</i>	L. amurense	Field Container	Williams (IL)	1978	Over the top	No significant injury; acceptable weed control
26374	Rydex 2 E	Privet	<i>Ligustrum sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06894	Barricade 65WG	Privet	<i>Ligustrum sp.</i>	L. japonicum	Field Container	Gilliam	1994	Broadcast	No significant injury; excellent spurge control
06894	Barricade 65WG	Privet	<i>Ligustrum sp.</i>	L. ovalifolium	Field Container	Senesac	1994	Foliar	Slight but transient injury.
06894	Barricade 65WG	Privet	<i>Ligustrum sp.</i>		Field Container	Fraelich	1996	Broadcast	Very slight injury increasing with rate; excellent weed control

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06596	Rydex 50WP	Privet	<i>Ligustrum sp.</i>		Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06596	Rydex 50WP	Privet	<i>Ligustrum sp.</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06596	Rydex 50WP	Privet	<i>Ligustrum sp.</i>	L. ovalifolium	Field In-Ground	Bing	1979	Directed	No significant injury.
09674	Barricade 65WG	Lily	<i>Lilium sp.</i>		Field Container	Buriff	1996	Broadcast, ground	No injury.
11444	Barricade 65WG	Statice	<i>Limonium sp.</i>	L. sinuatum	Field In-Ground	Elmore	1993	Broadcast, ground	No injury at 0.75 lb ai per acre, but 1.5 lb ai per acre was marginal.
11444	Barricade 65WG	Statice	<i>Limonium sp.</i>	'Excellent Dark Blue	Field In-Ground	Senesac	1997		Significant injury increasing with rate; excellent control of common purslane and annual grasses.
11866	Barricade 65WG	Lilyturf, Big Blue;Giant	<i>Liriope muscari</i>	'Evergreen Giant'	Field Container	Norcini	1994	Over the top	No significant injury; some control of Florida Betony.
11866	Barricade 65WG	Lilyturf, Big Blue;Giant	<i>Liriope muscari</i>		Field Container	Buriff	1997	Broadcast over soil	No injury.
06608	Rydex 50WP	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1978	Injection	Slight injury increasing with rate
06607	Rydex 2 E	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
11347	Barricade 65WG	Lilyturf, Creeping	<i>Liriope sp.</i>	L. spicata	Field Container	Norcini	1994	Over the top	No significant injury; some reduction in cover of Florida botany.
12411	Barricade 65WG	Cardinal Flower, Indian Pink	<i>Lobelia cardinalis</i>	L. erinus	Field Container	Krause	1997	Broadcast over soil	After the first application to plants prior to bloom, there was no visible injury, but initial number of blooms on plants decreased with increasing rate; 8 WAT there were no differences in flower number among treatments and the second application cause no visible differences.
05235	Rydex 50WP	Honeysuckle	<i>Lonicera sp.</i>	L. japonica	Field In-Ground	Elmore	1977	Broadcast, soil applies	No significant phytotoxicity; excellent efficacy for rough pigweed and good control of prostrate pigweed and sowthistle.
13206	Barricade 65WG	Loosestrife, Circle Flower	<i>Lysimachia sp.</i>	L. punctata	Field Container	Senesac	1997	Over the top	Slight to moderate injury increasing with rate.
09721	Barricade 65WG	Magnolia	<i>Magnolia sp.</i>	M. grandiflora	Field Container	Gilliam	1994	Broadcast	No injury.
09721	Barricade 65WG	Magnolia	<i>Magnolia sp.</i>	M. x soulangiana	Field Container	Buriff	1996	Broadcast	No injury.
07372	Rydex 50WP	Apple & Crabapple (Non-Bearing)	<i>Malus sp.</i>	'Toringo'	Field In-Ground	Bing	1978	Over the top	No significant injury.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
07372	Rydex 50WP	Apple & Crabapple (Non-Bearing)	<i>Malus sp.</i>	M. sieboldii	Field In-Ground	Bing	1979	Directed	No significant injury.
23007	Barricade 65WG	Peppermint	<i>Mentha x piperita</i>		Field Container	Senesac	2002	Over the top	No visible injury, but fresh weight was significantly reduced at 2.6 lb ai per acre.
26376	Rydex 50WP	Heavenly Bamboo	<i>Nandina domestica</i>		Field Container	Elmore	1977		No significant injury
07379	Factor 65WG	Heavenly Bamboo	<i>Nandina domestica</i>	'Atropurpurea nana'	Field Container	Gilliam	1994	Broadcast	No injury; excellent spurge control
13168	Barricade 65WG	Daffodil	<i>Narcissus sp.</i>		Field Container	Buriff	1997	Over the top	No injury.
12176	Barricade 65WG	Evening Primrose, Sundrops	<i>Oenothera sp.</i>	O. fruticosa	Field Container	Senesac	1996	Over the top	No injury.
12176	Barricade 65WG	Evening Primrose, Sundrops	<i>Oenothera sp.</i>	O. fruticosa	Field Container	Senesac	1997	Over the top	Very slight injury at all rates.
12176	Barricade 65WG	Evening Primrose, Sundrops	<i>Oenothera sp.</i>	O. pallida	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
24959	Barricade 65WG	Hopflower Oregano	<i>Origanum libanoticum</i>		Field Container	Klett	2002	Over the top	Trial 1: No injury; good weed control.
24959	Barricade 65WG	Hopflower Oregano	<i>Origanum libanoticum</i>		Field Container	Klett	2002	Over the top	Trial 2: No injury; good weed control.
12410	Barricade 65WG	Geranium	<i>Pelargonium sp.</i>	P. x hortorum	Field Container	Talbert	1998	Foliar broadcast	Slight transient injury.
12413	Barricade 65WG	Sage, Russian;Blue Spire	<i>Perovskia sp.</i>	P. atriplicifolia	Field Container	Senesac	1997	Over the top	No significant injury.
09713	Barricade 65WG	Petunia	<i>Petunia sp.</i>	P. x hybrida 'Celebrity Red'	Field Container	Gilliam	1994	Broadcast	Extensive injury at all rates; excellent weed control
09713	Barricade 65WG	Petunia	<i>Petunia sp.</i>		Field Container	Talbert	1995		Some injury at all rates.
09728	Barricade 65WG	Mock Orange	<i>Philadelphus sp.</i>	P. x virginialis 'Minnesota Snowflake'	Field Container	Buriff	1996	Broadcast, ground	No injury.
13439	Factor 65WG	Palm, Pygmy Date	<i>Phoenix roebelinii</i>		Field Container	Broschat	1998	Foliar	No significant injury; fair to good weed control
04520	Rydex 2 E	Photinia	<i>Photinia sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06599	Barricade 65WG	Photinia	<i>Photinia sp.</i>	P. x fraseri	Field Container	Gilliam	1994	Broadcast	No significant injury; excellent control of prostrate spurge

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
12414	Factor 65WG	False Dragon Head,Lion's Heart	<i>Physostegia sp.</i>	P. virginiana 'Vivid'	Field Container	Senesac	1997	Over the top	No initial injury, but 1.5 and 3.0 lb ai per acre exhibited slight injury 3 and 6 weeks after treatment.
26423	Rydex 50WP	Spruce	<i>Picea sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
26425	Rydex 50WP	Japanese Andromeda	<i>Pieris japonica</i>		Field Container	Ryan	1979	Directed	No significant visible injury, but fresh weights were reduced; excellent control of barnyardgrass and bittercress.
11631	Barricade 65WG	Andromeda	<i>Pieris sp.</i>	P. compacta	Field Container	Senesac	1994	Foliar	Slight injury observed which may not be treatment related.
07365	Rydex 50WP	Andromeda	<i>Pieris sp.</i>	P. japonica 'Compacta'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
06893	Rydex 2 E	Pine	<i>Pinus sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Ahrens	1978	Over the top	No phytotoxicity; excellent weed control.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. thunbergii	Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. sylvestris	Field In-Ground	Williams (IL)	1978	Directed	No injury; excellent weed control.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Ahrens	1979	Over the top	No injury; excellent weed control.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Bing	1979	Directed	No significant injury.
06624	Rydex 50WP	Pine	<i>Pinus sp.</i>	P. thunbergii	Field In-Ground	Bing	1979	Directed	No significant injury.
06613	Rydex 50WP	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1978	Injection	Slight to moderate injury increasing with rate.
06613	Rydex 50WP	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06621	Rydex 50WP	Southern Yew	<i>Podocarpus macrophyllus</i>		Field Container	Glaze	1978	Injection	Slight injury increasing with rate
06917	Rydex 2 E	Southern Yew	<i>Podocarpus macrophyllus</i>		Field Container	Glaze	1979	Injection	Slight injury observed increasing with rate.
02545	Barricade 65WG	Fir, Douglas	<i>Pseudotsuga menziesii</i>		Field Container	Buriff	1996	Broadcast	No injury.
00909	Rydex 50WP	Firethorn	<i>Pyracantha sp.</i>	P. fortuneana 'Graber'	Field Container	Elmore	1975	Over the top with immediate irrigation	No significant injury; excellent efficacy of annual ryegrass and annual bluegrass.
00909	Rydex 50WP	Firethorn	<i>Pyracantha sp.</i>	P. 'Orange Glow'	Field Container	Ticknor	1978		No injury.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
05238	Rydex 50WP	Firethorn	<i>Pyracantha sp.</i>	P. coccinea 'Lalandei'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
07375	Rydex 50WP	Oak	<i>Quercus sp.</i>	Q. rubra	Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
07375	Rydex 50WP	Oak	<i>Quercus sp.</i>	Q. rubra	Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
07375	Rydex 50WP	Oak	<i>Quercus sp.</i>	Q. borealis	Field In-Ground	Bing	1979	Directed	No significant injury.
20148	Barricade 65WG	Buckthorn	<i>Rhamnus sp.</i>	R. smithii	Field Container	Klett	2000	Over the top	No significant injury; significant weed control
20148	Barricade 65WG	Buckthorn	<i>Rhamnus sp.</i>	R. smithii	Field Container	Klett	2001	Over the top	No significant phytotoxicity; significant weed control at the 1.3 lb rate
06601	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1978	Injection	Slight to moderate phytotoxicity increasing with rate.
06601	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1978	Injection	Slight to moderate phytotoxicity increasing with rate.
06601	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	R. 'Hinodegiri'	Field Container	Ryan	1978	Directed	Slight to moderate reduction in shoot fresh weight increasing with rate.
06601	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	R. 'Rosebud'	Field Container	Ryan	1978	Directed	Slight to moderate reduction in shoot fresh weight increasing with rate.
06597	Rydex 50WP	Rhododendron	<i>Rhododendron sp.</i>	'Hino Crimson'	Field Container	Ticknor	1978		No injury.
04446	Rydex 2 E	Azalea, & Rhododendron	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
04446	Rydex 2 E	Azalea, & Rhododendron	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06601	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	'Caroline Gable'	Field Container	Ryan	1979	Directed	Significant reduction in height and fresh weight; excellent control of barnyardgrass and bittercress.
06602	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06602	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Hinocrimson'	Field In-Ground	Bing	1979	Directed	No significant injury.
06598	Rydex 50WP	Rhododendron	<i>Rhododendron sp.</i>	R. catawbiense 'Roseum Elegans'	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06598	Rydex 50WP	Rhododendron	<i>Rhododendron sp.</i>	R. chionoides	Field In-Ground	Haramaki	1979	Over the top	No significant injury; excellent control of broadleaves and grasses.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06602	Rydex 50WP	Azalea	<i>Rhododendron sp.</i>	'Purple Splendor'	Field In-Ground	Kuhns	1979	Over the top	No injury; adequate control for preemergent weeds but poor where weed seedlings had already emerged.
06598	Rydex 50WP	Rhododendron	<i>Rhododendron sp.</i>	'Roseum Elegans'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
11807	Rydex 50WP	Rose	<i>Rosa sp.</i>		Field In-Ground	Bing	1978	Over the top	Some injury, but undescribed.
06457	Barricade 65WG	Rose	<i>Rosa sp.</i>	R. chinensis minima	Field In-Ground	Boydston	1995	Broadcast	No injury at 1.5 or 3.0 lb ai per acre, but 6.0 lb ai per acre caused marginal leaf necrosis only on treated leaves - newly emerged leaves did not exhibit any phytotoxicity; excellent control of annual weeds at all rates.
08032	Barricade 65WG	Fern, Leatherleaf	<i>Rumohra adiantiformis</i>		Greenhouse	Stamps	1992	Ground, spray	No significant injury; excellent weed control
11881	Barricade 65WG	Butchers Broom, Israeli Ruscus	<i>Ruscus aculeatus</i>	R. hypophyllum	Greenhouse	Stamps	1992	Ground, spray	No injury; good to excellent weed control.
22953	Barricade 65WG	Sage	<i>Salvia daghestanica</i>		Field Container	Klett	2002		Trial 2: No significant phytotoxicity; good weed control.
22953	Barricade 65WG	Sage	<i>Salvia daghestanica</i>		Field Container	Klett	2002		Trial 1: No significant phytotoxicity; significant weed control.
12416	Barricade 65WG	Sage, Scarlet	<i>Salvia splendens</i>	S. x sylvestris 'Rose Queen'	Field Container	Senesac	1998	Broadcast	No significant injury; no weeds present at time of application
22954	Barricade 65WG	Skullcap	<i>Scutellaria racemosa</i>		Field Container	Klett	2002	Over the top	Trial 1: Apparently disease problems caused crop failure; excellent weed control
22954	Barricade 65WG	Skullcap	<i>Scutellaria racemosa</i>		Field Container	Klett	2002	Over the top	Trial 2: No significant phytotoxicity good weed control
09724	Barricade 65WG	Stonecrop	<i>Sedum sp.</i>	S. spectabile	Field Container	Buriff	1996	Broadcast, ground	No injury.
09724	Barricade 65WG	Stonecrop	<i>Sedum sp.</i>	S. spurium 'Bronze Carpet'	Field Container	Senesac	1996	Over the top	Significant injury increasing with rate.
26377	Rydex 50WP	Redwood	<i>Sequoia sempervirens</i>		Field Container	Elmore	1977		Slight injury at 2 and 4 lb ai per acre.
23008	Barricade 65WG	Campion, Sea	<i>Silene vulgaris ssp. Maritima</i>	S. caroliniana	Field Container	Senesac	2002	Over the top	Moderate but transient injury; no reduction in fresh weight at the end of the experiment.
09727	Barricade 65WG	Bridal-Wreath	<i>Spiraea sp.</i>	S. japonica 'Little Princess'	Field Container	Buriff	1996	Broadcast, ground	No injury.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
26418	Rydex 50WP	Eugenia	<i>Syzygium paniculatum</i>	'Newport'	Field Container	Elmore	1977	Broadcast spray, soil applied	No injury.
09710	Barricade 65WG	Marigold	<i>Tagetes sp.</i>	T. erecta 'Inca Yellow'	Field Container	Norcini	1993	Foliar	Slight foliar distortion 28DAT
09710	Barricade 65WG	Marigold	<i>Tagetes sp.</i>	T. erecta 'Inca Orange'	Field Container	Gilliam	1994	Broadcast	No visible injury but growth was suppressed slightly (10-15%).
09710	Barricade 65WG	Marigold	<i>Tagetes sp.</i>	T. patula	Field Container	Boydston	1995	Broadcast	No injury at 7DAT for 1st and 2nd applications; excellent control of barnyard grass
09710	Barricade 65WG	Marigold	<i>Tagetes sp.</i>		Field Container	Talbert	1995	Broadcast	Slight injury observed starting 5WAT increasing with rate.
09710	Barricade 65WG	Marigold	<i>Tagetes sp.</i>		Field Container	Buriff	1996	Broadcast, ground	No injury.
05797	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. x media	Field Container	Williams (IL)	1978	Over the top	No significant phytotoxicity; good weed control
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. cuspidata	Field In-Ground	Ahrens	1978	Over the top	No injury; excellent weed control
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. cuspidata	Field In-Ground	Ahrens	1979	Over the top	No injury; excellent weed control.
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. cuspidata 'Hicksii'	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. media 'Hatfieldii'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
05285	Rydex 50WP	Yew	<i>Taxus sp.</i>	T. media 'Hicksii'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control.
05792	Rydex 50WP	Arborvitae	<i>Thuja sp.</i>	T. occidentalis	Field Container	Williams (IL)	1978	Over the top	No injury; commercially acceptable weed control
06590	Rydex 50WP	Arborvitae	<i>Thuja sp.</i>	T. occidentalia	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06590	Rydex 50WP	Arborvitae	<i>Thuja sp.</i>	T. occidnetalis 'Elegantissima'	Field In-Ground	Kuhns	1979	Over the top	No injury; marginally acceptable control
06590	Rydex 50WP	Arborvitae	<i>Thuja sp.</i>	T. occidentalis 'Woodwardii'	Field In-Ground	Kuhns	1979	Over the top	No injury; adequate control for preemergent weeds but poor where weed seedlings had already emerged.
23010	Barricade 65WG	Thyme, Creeping	<i>Thymus praecox</i>	T. serpyllun	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
11840	Barricade 65WG	Jasmine, Star;Confederate	<i>Trachelospermum jasminoides</i>		Field Container	Norcini	1993	Foliar	Slight but transient injury at the 6.0 lb rate.
23011	Barricade 65WG	Clover, White	<i>Trifolium repens</i>	'Atropurpureum'	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
07370	Rydex 50WP	Hemlock	<i>Tsuga sp.</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
07370	Rydex 50WP	Hemlock	<i>Tsuga sp.</i>	T. canadensis	Field In-Ground	Bing	1979	Directed	No significant injury.
23012	Barricade 65WG	Speedwell, Brooklime	<i>Veronica sp.</i>	V. repens	Field Container	Senesac	2002	Over the top	No significant phytotoxicity.
05798	Rydex 50WP	Arrowwood	<i>Viburnum sp.</i>	V. plicatum tomentosum	Field Container	Bing	1978	Over the top	No significant injury; some reduction in weed number but no species recorded.
05798	Rydex 50WP	Arrowwood	<i>Viburnum sp.</i>		Field Container	Glaze	1978	Injection	No significant injury.
06918	Rydex 2 E	Arrowwood	<i>Viburnum sp.</i>		Field Container	Glaze	1979	Injection	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
12957	Barricade 65WG	Arrowwood	<i>Viburnum sp.</i>	V. lantana	Field Container	Senesac	1997	Over the top	No significant injury.
06592	Rydex 50WP	Arrowwood	<i>Viburnum sp.</i>	V. wrightii	Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
06592	Rydex 50WP	Arrowwood	<i>Viburnum sp.</i>	V. wrightii	Field In-Ground	Bing	1978	Over the top	Riverdale: No significant injury.
06592	Rydex 50WP	Arrowwood	<i>Viburnum sp.</i>	V. setigerum	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
09191	Barricade 65WG	Periwinkle	<i>Vinca sp.</i>	V. minor	Field Container	Talbert	1995	Broadcast	Slight injury at all rates.
12171	Factor 65WG	Pansy	<i>Viola sp.</i>	V. tricolor 'Clear Sky True Blue'	Field Container	Beste	1996	Ground, broadcast	Very slight visible injury on recently transplanted pansy, but significant reduction in growth and flower counts occurred.
12171	Factor 65WG	Pansy	<i>Viola sp.</i>	V. x wittrockiana 'Crystal Bowl Yellow'	Field Container	Senesac	1998	Broadcast	No significant injury; no weeds present at time of application
12171	Factor 65WG	Pansy	<i>Viola sp.</i>	V. x wittrockiana 'Bingo Blue with Blotch'	Field Container	Senesac	1998	Broadcast	No significant injury.
13440	Barricade 65WG	Palm, Mexican Fan	<i>Washingtonia robusta</i>		Field Container	Broschat	1998	Foliar spray	No significant injury; good weed control
26411	Rydex 50WP	Adams-Needle	<i>Yucca filamentosa</i>		Field Container	Williams (IL)	1978	Over the top	Slight chlorosis and necrosis to leaf tips; excellent preemergent control of weeds
20147	Barricade 65WG	California Fuschia	<i>Zauschneria californica</i>	'Latifolia'	Field Container	Klett	1999	Over the top	No significant injury; good weed control at both rates
20147	Barricade 65WG	California Fuschia	<i>Zauschneria californica</i>	'Latifolia'	Field Container	Klett	2000	Over the top	No significant injury; significant weed control
09338	Barricade 65WG	Zinnia	<i>Zinnia sp.</i>	'White Star'	Field Container	Gilliam	1994	Broadcast	Moderate stunting at all rates; researcher does not recommend use at rates of 3.0 lb ai per acre or greater.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
09338	Barricade 65WG	Zinnia	<i>Zinnia sp.</i>		Field Container	Talbert	1995	Broadcast	Severe injury at all rates (1, 4, and 8 lb ai per acre).
09338	Barricade 65WG	Zinnia	<i>Zinnia sp.</i>	Z. elegans 'Peter Pan White'	Field Container	Gilliam	1997	Ground	No significant visible injury, but 1.5 and 3.0 lb ai per acre resulted in significantly lower dry rates; excellent efficacy.

Table 7. Detailed Summary of Crop Safety Testing with Granular Formulations of Prodiamine

Notes: Table entries are sorted by crop Latin name. Only prodiamine reports received by 10/1/2006 are included in this table.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06460	Rydex 2G	Maple	<i>Acer sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06460	Rydex 2G	Maple	<i>Acer sp.</i>	A. platanoides	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
26420	Rydex 2G	Carpet Bugleweed	<i>Ajuga reptans</i>		Field In-Ground	Bing	1978	Overall spray	No significant injury.
06609	Rydex 2G	Aucuba	<i>Aucuba sp.</i>		Field Container	Glaze	1978	Over the top	Slight injury increasing with rate
06609	Rydex 2G	Aucuba	<i>Aucuba sp.</i>	A. japonica	Field Container	Currey	1979		No injury; excellent control of Dactyloctenium, Digitaria, Oxalis, Cardamine, Linaria, Cyperus, and grasses.
06609	Rydex 2G	Aucuba	<i>Aucuba sp.</i>		Field Container	Glaze	1979	Over the top	Slight to moderate injury increasing with rate
26370	RegalKade G	Begonia	<i>Begonia sp.</i>	B. semperflorens-cultorum	Field Container	Gilliam	1997		No significant injury; excellent weed control
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1977		No significant injury.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1977	Soil applied broadcast	No significant injury.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>	B. microphylla 'japonica'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1978	Over the top	Slight injury increasing with rate.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Currey	1979		No injury; excellent control of Phyllanthus, Digitaria, Eclipta, Ludwigia, Oxalis, Chamaesyce, Cardamine, and Euphorbiaceae.
06864	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
05347	Rydex 2G	Boxwood	<i>Buxus sp.</i>		Field In-Ground	Smith	1978		No injury
26410	Rydex 2G	Heather	<i>Calluna sp.</i>		Field Container	Bing	1978	Over the top	No injury.
06865	Rydex 2G	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1977	Soil applied broadcast	Some injury, but some check plants also had injury.
06865	Rydex 2G	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1977		No significant injury.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06865	Rydex 2G	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1978	Over the top	Very slight to slight injury increasing with rate.
06865	Rydex 2G	Cleyera	<i>Cleyera japonica</i>		Field Container	Currey	1979		No injury; excellent control of Dactyloctenium, Digitaria, Oxalis, Cardamine, Linaria, Cyperus, Phyllanthus, and Grasses
06865	Rydex 2G	Cleyera	<i>Cleyera japonica</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
12927	Rydex 2G	Dogwood, Flowering	<i>Cornus florida</i>		Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
12927	Rydex 2G	Dogwood, Flowering	<i>Cornus florida</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Youngia, Cardamine, Eclipta, Phyllanthus, Ludwiga, and Chamaesyce.
05271	Rydex 2G	Dogwood	<i>Cornus sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
05271	Rydex 2G	Dogwood	<i>Cornus sp.</i>		Field In-Ground	Bing	1978	Over the top	No injury.
05271	Rydex 2G	Dogwood	<i>Cornus sp.</i>	C. stolonifera	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06870	Rydex 2G	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1977	Soil applied broadcast	Moderate injury to death, increasing with rate.
06870	Rydex 2G	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1977		Significant injury at all rates.
06870	Rydex 2G	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1978	Over the top	Minor to moderate injury increasing with rate.
06870	Rydex 2G	Pampas Grass	<i>Cortaderia</i>	C. selloana	Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwiga, and Chamaesyce.
06870	Rydex 2G	Pampas Grass	<i>Cortaderia</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Royal Beauty'	Field Container	Fretz	1978	Broadcast	No injury; acceptable crabgrass control with the exception of the 8/14 readings, and excellent control of rough pigweed, foxtail and lambsquarters.
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>		Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.

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		Common Name	Latin Name	Cultivar					
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Lowfast'	Field Container	Creager	1979	Broadcast	No significant injury.
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Lowfast'	Field Container	Ryan	1979	Soil applied broadcast	No significant visible injury, but fresh weights were reduced; excellent control of barnyardgrass and bittercress.
00902	Rydex 2G	Cotoneaster	<i>Cotoneaster sp.</i>	C. dammeri 'Lowfast'	Field Container	Creager	1980	Broadcast	No injury.
00327	Rydex 2G	Russian Olive	<i>Elaeagnus angustifolia</i>	E. pungens 'Fruitlandi'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
00327	Rydex 2G	Russian Olive	<i>Elaeagnus angustifolia</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Ooxalis, Digitaria, Youngia, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamaesyce.
07369	Rydex 2G	Euonymus	<i>Euonymus sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
07369	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei variegata	Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
07369	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'coloratus'	Field Container	Creager	1979	Broadcast	No significant injury.
07369	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'Emerald Cushion'	Field Container	Ryan	1979	Soil applied broadcast	No significant injury; excellent control of barnyardgrass and bittercress.
07369	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei 'coloratus'	Field Container	Creager	1980	Soil applied broadcast	No significant injury.
06463	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei	Field In-Ground	Bing	1978	Over the top	No significant injury.
06463	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei radicans	Field In-Ground	Bing	1978	Over the top	No significant injury.
06463	Rydex 2G	Euonymus	<i>Euonymus sp.</i>		Field In-Ground	Smith	1978		Slight injury with one rep at the 12 lb per acre rate.
06463	Rydex 2G	Euonymus	<i>Euonymus sp.</i>	E. fortunei radicans	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06463	Rydex 2G	Euonymus	<i>Euonymus sp.</i>		Field In-Ground	Talbert	1979	Soil applied broadcast	No injury; good control of pigweed and carpetweed, poor control of goosegrass and signalgrass.
26426	Rydex 2G	Japanese Fatsia, Formosa Rice Tree	<i>Fatsia sp.</i>	F. japonica	Field Container	Currey	1979		No injury; excellent efficacy of Dactyloctenium, Digitaria, Oxalis, Cardamine, Linaria, Cyperus, Phyllanthus, and Grasses.

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		Common Name	Latin Name	Cultivar					
26412	Rydex 2G	Golden Bells	<i>Forsythia sp.</i>	F. intermedia	Field Container	Fretz	1978	Broadcast	Slight but transient phytotoxicity; excellent control of crabgrass, pigweed, lambsquarter and pigweed.
05268	Rydex 2G	Golden Bells	<i>Forsythia sp.</i>		Field In-Ground	Bing	1978	Over the top	No injury.
05268	Rydex 2G	Golden Bells	<i>Forsythia sp.</i>		Field In-Ground	Smith	1978	Granular distribution	No significant injury.
05268	Rydex 2G	Golden Bells	<i>Forsythia sp.</i>	F. intermedia	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
05268	Rydex 2G	Golden Bells	<i>Forsythia sp.</i>		Field In-Ground	Talbert	1979	Soil applied broadcast	Slight injury; great control of signalgrass and pigweed.
06866	Rydex 2G	Jasmine, Cape, Common Gardenia	<i>Gardenia sp.</i>		Field Container	Glaze	1978	Over the top	Very slight to slight injury increasing with rate.
06866	Rydex 2G	Jasmine, Cape, Common Gardenia	<i>Gardenia sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06866	Rydex 2G	Jasmine, Cape, Common Gardenia	<i>Gardenia sp.</i>	G. jasminoides	Field Container	Currey	1980		No injury; excellent control of Dactyloctenium, Digitaria, Oxalis, Cardamine, Linaria, Cyperus, Phyllanthus and Grasses.
07368	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field Container	Bing	1978	Over the top	No injury.
07368	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
07368	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
05263	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Bing	1978	Over the top	Farmingdale: No significant injury.
05263	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Bing	1978	Over the top	Riverhead: No significant injury.
05263	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
05263	Rydex 2G	English Ivy	<i>Hedera helix L. ssp. Helix</i>		Field In-Ground	Talbert	1979	Over the top	No significant injury; excellent signalgrass and great evening primrose control.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata compacta	Field Container	Glaze	1977	Soil applied broadcast	No significant injury.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata	Field Container	Glaze	1977		No significant injury.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. cornuta	Field Container	Glaze	1977		No apparent injury.

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		Common Name	Latin Name	Cultivar					
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata helleryi	Field Container	Bing	1978	Over the top	No significant injury; some reduction in weed number, but no mention of weed species.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'Compacta'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata	Field Container	Glaze	1978	Over the top	Slight injury increasing with rate.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata microphylla	Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'convexa'	Field Container	Creager	1979	Broadcast	No significant injury.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamaesyce.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata	Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'Howardi'	Field Container	Ryan	1979	Soil applied broadcast	No significant injury; excellent control of barnyardgrass and bittercress.
06468	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'convexa'	Field Container	Creager	1980	Soil applied broadcast	No significant injury.
05262	Rydex 2G	Holly	<i>Ilex sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
05262	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'convexa'	Field In-Ground	Frank	1979	Soil applied broadcast	No injury; good weed control.
05262	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'Convexa'	Field In-Ground	Frank	1980	Soil applied broadcast	No injury; good weed control.
05262	Rydex 2G	Holly	<i>Ilex sp.</i>	I. crenata 'Convexa'	Field In-Ground	Frank	1981	Soil applied broadcast	No injury; poor weed control.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa compacta	Field Container	Glaze	1977		No significant injury.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field Container	Bing	1978	Over the top	No significant injury; some reduction in weed number but no species recorded.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. chinensis 'Pfitzeriana'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field Container	Fretz	1978	Broadcast	No significant injury; excellent crabgrass, pigweed, lambsquarter, and foxtail.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>		Field Container	Glaze	1978	Over the top	Slight injury increasing with rate.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis 'Bar Harbor'	Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field Container	Creager	1979	Broadcast	No significant injury.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamaesyce.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
04495	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosa	Field Container	Creager	1980	Soil applied broadcast	No significant injury.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis plumosus compacta	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis 'Plumosa'	Field In-Ground	Frank	1979	Soil applied broadcast	No injury; good weed control.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>		Field In-Ground	Talbert	1979	Soil applied broadcast	No injury; good control of pigweed and mediocre control of signalgrass and goosegrass.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis 'Plumosa'	Field In-Ground	Frank	1980	Soil applied broadcast	No injury; good weed control.
06459	Rydex 2G	Juniper	<i>Juniperus sp.</i>	J. horizontalis 'Plumosa'	Field In-Ground	Frank	1981	Soil applied broadcast	No injury; poor weed control.
09726	Rydex 2G	Crape Myrtle	<i>Lagerstroemia indica</i>		Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.

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		Common Name	Latin Name	Cultivar					
09726	Rydex 2G	Crape Myrtle	<i>Lagerstroemia indica</i>		Field Container	Currey	1979	Over the top	No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Youngia, Cardamine, Eclipta, Phyllanthus,, Ludwigia, and Chamaesyce.
26372	RegalKade G	Shasta Daisy	<i>Leucanthemum maximum</i>	'Snow Lady'	Field Container	Gilliam	1997	Ground broadcast	Extensive injury; excellent weed control
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>	L. japonicum	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>		Field Container	Glaze	1978	Over the top	None to slight injury increasing with rate
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>	L. lucidum	Field Container	Creager	1979	Broadcast	No significant injury.
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamaesyce.
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06868	Rydex 2G	Privet	<i>Ligustrum sp.</i>	L. lucidum	Field Container	Creager	1980	Broadcast	No significant injury.
05247	Rydex 2G	Privet	<i>Ligustrum sp.</i>		Field In-Ground	Bing	1978	Over the top	No injury.
05247	Rydex 2G	Privet	<i>Ligustrum sp.</i>		Field In-Ground	Smith	1978		No injury.
05247	Rydex 2G	Privet	<i>Ligustrum sp.</i>	L. ovalifolium	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06896	Rydex 2G	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1977	Soil applied broadcast	No significant injury.
06896	Rydex 2G	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1977		No apparent injury.
06896	Rydex 2G	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1978	Over the top	Slight injury increasing with rate
06896	Rydex 2G	Lilyturf, Creeping	<i>Liriope sp.</i>	L. spicata	Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamaesyce.
06896	Rydex 2G	Lilyturf, Creeping	<i>Liriope sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
09334	Rydex 2G	Honeysuckle	<i>Lonicera sp.</i>	L. tatarica	Field Container	Fretz	1978	Broadcast	No injury; excellent control of crabgrass, rough pigweed, foxtail, and lambsquarter.

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		Common Name	Latin Name	Cultivar					
07367	Rydex 2G	Apple & Crabapple (Non-Bearing)	<i>Malus sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
07367	Rydex 2G	Apple & Crabapple (Non-Bearing)	<i>Malus sp.</i>	M. sieboldii	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
07382	Rydex 2G	Heavenly Bamboo	<i>Nandina domestica</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamasyce.
26409	Rydex 2G	Sourwood, Sorrel Tree	<i>Oxydendrum arboreum</i>		Field Container	Bing	1978	Over the top	No significant injury
09722	Rydex 2G	Japanese Spurge	<i>Pachysandra terminalis</i>		Field In-Ground	Bing	1978	Overall spray	No significant injury.
26414	RegalKade G	Geranium	<i>Pelargonium sp.</i>	P. x hortorum	Field Container	Gilliam	1997	Ground	No significant injury; excellent weed control
06871	Rydex 2G	Photinia	<i>Photinia sp.</i>	P. x Fraseri	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06871	Rydex 2G	Photinia	<i>Photinia sp.</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamasyce.
06871	Rydex 2G	Photinia	<i>Photinia sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
26422	Rydex 2G	Spruce	<i>Picea sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
26424	Rydex 2G	Japanese Andromeda	<i>Pieris japonica</i>		Field Container	Ryan	1979	Soil applied broadcast	No significant injury; excellent control of barnyardgrass and bittercress.
06867	Rydex 2G	Pine	<i>Pinus sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
05256	Rydex 2G	Pine	<i>Pinus sp.</i>	P. thunbergii	Field In-Ground	Bing	1978	Over the top	No significant injury.
05256	Rydex 2G	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Bing	1978	Over the top	No significant injury.
05256	Rydex 2G	Pine	<i>Pinus sp.</i>	P. thunbergii	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
05256	Rydex 2G	Pine	<i>Pinus sp.</i>	P. strobus	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1977	Soil applied broadcast	No significant injury.

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		Common Name	Latin Name	Cultivar					
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1977	Over the top	Significant injury.
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>	'Variegata'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1978	Over the top	Slight to moderate injury increasing with rate.
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamasyce.
06872	Rydex 2G	Pittosporum, Japanese	<i>Pittosporum tobira</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06873	Rydex 2G	Southern Yew	<i>Podocarpus macrophyllus</i>	P. macrophyllus 'Maki'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06873	Rydex 2G	Southern Yew	<i>Podocarpus macrophyllus</i>		Field Container	Glaze	1978	Over the top	Slight injury increasing with rate
06873	Rydex 2G	Southern Yew	<i>Podocarpus macrophyllus</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamasyce.
06873	Rydex 2G	Southern Yew	<i>Podocarpus macrophyllus</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. coccinea	Field Container	Bing	1978	Over the top	No significant injury; some recution in weed number but no species noted
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. coccinea	Field Container	Bing	1978	Over the top	No injury.
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. koidzumii	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. coccinea	Field Container	Fretz	1978	Broadcast	Slight transient phytotoxicity; good crabgrass control with the exception of in July and August and good control of rough pigweed, lambsquarter, and foxtail.

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		Common Name	Latin Name	Cultivar					
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. coccinea 'Mohave'	Field Container	Creager	1979	Broadcast	No significant injury.
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>		Field Container	Currey	1979		No injury; excellent control of Euphorbiaceae, Oxalis, Digitaria, Cardamine, Eclipta, Phyllanthus, Ludwigia, and Chamasyce.
06745	Rydex 2G	Firethorn	<i>Pyracantha sp.</i>	P. coccinea 'Wyattii'	Field Container	Creager	1980	Soil applied broadcast	No injury.
06458	Rydex 2G	Oak	<i>Quercus sp.</i>	Q. rubra	Field In-Ground	Bing	1978	Over the top	No significant injury.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1977		Very slight phytotoxicity at all rates initially; the 8 lb ai per acre rate did have significant injury at later reading dates but it is unclear whether it was due to the applications.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1977	Soil applied broadcast	Some injury noted; however weed check had same level of plant injury.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1977		Very slight phytotoxicity 12 lb ai per acre; no injury at 4 and 8 lb ai per acre.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1977	Soil applied broadcast	Slight injury increasing with rate but hard to tease apart because weedy check also exhibited plant injury.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>		Field Container	Bing	1978	Over the top	No significant injury; rates increasing from 1 lb ai to 8 lb ai did reduce weed number in pots, but no notes were taken of which weeds were present.
07366	Rydex 2G	Rhododendron	<i>Rhododendron sp.</i>	R. roseum elegans	Field Container	Bing	1978		Some injury, but undescribed.
07366	Rydex 2G	Rhododendron	<i>Rhododendron sp.</i>	R. roseum elegans	Field Container	Bing	1978	Over the top	No significant injury; reduction in weed number but no species recorded.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'President Clay'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligatorweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Currey	1978	Over the top	No injury; excellent control of crabgrass, goosegrass, yellow hawksbeard, oxalis, bittercress, alligaotrweed (Eclipta), phyllanthus and spurge with 4 lb ai per acre.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1978	Over the top	Slight injury increasing with rate.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1978	Over the top	Very slight phytotoxicity 12 lb ai per acre; no injury at 4 and 8 lb ai per acre.
07366	Rydex 2G	Rhododendron	<i>Rhododendron sp.</i>		Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	'Delaware White'	Field Container	Bing	1979	Soil applied broadcast	No significant injury; some control of oxalis and prostrate spurge.
07366	Rydex 2G	Rhododendron	<i>Rhododendron sp.</i>	'Hinocrimson'	Field Container	Creager	1979	Broadcast	Slight transient injury.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. obtusum 'Coral Belle'	Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. formosa	Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	'Caroline Gable'	Field Container	Ryan	1979	Soil applied broadcast	Fresh weights were reduced; excellent control of barnyardgrass and bittercress.
06467	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. 'Hinocrimson'	Field Container	Creager	1980	Broadcast	No injury; some weed control.
06461	Rydex 2G	Azalea	<i>Rhododendron sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06461	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. gandavense	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06461	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. 'Hershey Red'	Field In-Ground	Frank	1979	Soil applied broadcast	No injury; good weed control.
06461	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. 'Hershey Red'	Field In-Ground	Frank	1980	Soil applied broadcast	No injury; good weed control.
06461	Rydex 2G	Azalea	<i>Rhododendron sp.</i>	R. Hershey Red'	Field In-Ground	Frank	1981	Soil applied broadcast	No injury; poor weed control.
11802	Rydex 2G	Rose	<i>Rosa sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
12406	RegalKade G	Sage, Scarlet	<i>Salvia splendens</i>	'Red Hot Sally'	Field Container	Gilliam	1997	Ground	No significant injury.
26421	Rydex 2G	Stonecrop	<i>Sedum sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
26415	RegalKade G	Marigold	<i>Tagetes sp.</i>	T. erecta	Field Container	Gilliam	1997	Ground	No significant injury; good weed control.
06456	Rydex 2G	Yew	<i>Taxus sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06456	Rydex 2G	Yew	<i>Taxus sp.</i>	T. cuspidata 'Hicksii'	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
06456	Rydex 2G	Yew	<i>Taxus sp.</i>	T. media 'Hicksii'	Field In-Ground	Frank	1979	Soil applied broadcast	No injury; good weed control.

PR #	Product	Crop			Production Site	Researcher(s)	Year	Application Method	Results Summary
		Common Name	Latin Name	Cultivar					
06456	Rydex 2G	Yew	<i>Taxus sp.</i>	T. media 'Hicksii'	Field In-Ground	Frank	1980	Soil applied broadcast	No injury; good weed control.
06456	Rydex 2G	Yew	<i>Taxus sp.</i>	T. media 'Hicksii'	Field In-Ground	Frank	1981	Soil applied broadcast	No injury; poor weed control.
05359	Barricade G	Arborvitae	<i>Thuja sp.</i>		Field In-Ground	Smith	1978		No injury.
07373	Rydex 2G	Hemlock	<i>Tsuga sp.</i>		Field In-Ground	Bing	1978	Over the top	No significant injury.
06874	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
06874	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>		Field Container	Bing	1978	Over the top	No significant injury.
06874	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>		Field Container	Glaze	1978	Over the top	Very slight to slight injury increasing with rate.
06874	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>		Field Container	Glaze	1979	Over the top	No injury after single application; after second application injury observed at 8 and 16 lb ai per acre.
05241	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>		Field In-Ground	Smith	1978	Soil applied broadcast	No injury at 3 lb ai per acre; moderate injury at 12 lb ai per acre.
05241	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>	V. wrightii	Field In-Ground	Bing	1979	Over the top	No significant injury.
05241	Rydex 2G	Arrowwood	<i>Viburnum sp.</i>	V. trilobium	Field In-Ground	Bing	1979	Soil applied broadcast	No significant injury.
26419	Rydex 2G	Periwinkle	<i>Vinca sp.</i>		Field In-Ground	Bing	1978	Overall spray	No significant injury.
09725	Rydex 2G	Weigela	<i>Weigela sp.</i>	W. florida	Field Container	Fretz	1978	Broadcast	No significant injury; excellent control of crabgrass, rough pigweed, foxtail and lambsquarter.

Label Suggestions

It is suggested that the following 32 genera or species exhibiting no injury in these experiments be added to the wettable dry granular formulations of prodiamine such as Barricade 65WG, Cavalkade WDG, or RegalKade 65WDG.

Acer saccharum
Agastache rupestris
Ageratum houstonianum
Aristida stricta
Aspidistra elatior
Brassica oleracea
Buddleia alternifolia
Centaurea gymnocarpa
Cornus alternifolia
Cotoneaster glacophylla
Dendranthemum sp.
Diascia intergerrima
Digitalis sp.
Euonymus macrophylla
Hosta undulate
Lanata sp.

Leucanthemum maximum
Lobelia erinus
Oenothera fruticosa
Oenothera pallida
Origanum libanoticum
Pieris compacta
Quercus borealis
Rhamnus smithii
Ruscus hypophyllum
Salvia daghestanica
Sedum spectabile
Spirea japonica
Tagetes sp.
Trachelospermum jasminoides
Viola x wittrockiana
Zauschneria californica

IR-4 has very limited data for following list of 19 plants. However, if other available data demonstrate no or minimal transient injury for these crops, IR-4 supports placing these on the prodiamine WDG labels also.

Amsonia hubrichtii
Antirrhinum majus
Asclepias sp.
Asparagus virgatus
Aubrieta deltoidea
Aurinia saxatilis
Cerastium tomentosum
Chrysalidocarpus lutescens
Colchicum sp.
Cytisus purgans

Erigeron karvinskianus
Eryngium planum
Geum sp.
Goniolimon tataricum
Liatris sp.
Pelargonium x hortorum
Phoenix roebelinii
Salvia x sylvestris
Washingtonia robusta

It is suggested that the following genera or species be moved to the all states including CA section. Those with asterisks have some data generated in CA or in conditions similar to CA.

Achillea millefolium *
Aquilegia sp.
Artemisia lactiflora *
Begonia sp.
Buddleia davidii
Gypsophila elegans *
Hemerocallis sp.

Hosta fortunei *
Lilium sp.
Liriope spicata
Perovskia atriplicifolia
Veronica repens
Viburnum lantana

It is suggested that the following 6 genera or species exhibiting no injury in these experiments be added to the granular formulations of prodiamine such as RegalKade G.

Ajuga reptans
Elaeagnus angustifolia
Pachysandra terminalis

Pelargonium sp.
Salvia splendens
Tagetes sp.

Appendix 1: Available Protocol

PHYTOTOXICITY PROTOCOL FOR CLEARING PRODIAMINE ON ORNAMENTALS

Date: 10/04

Ornamental Protocol Number: 490

General label directions: Refer to Product Label

Research program:

Site (species, variety, etc.) - As Attached

Pest(s) - As Attached

Pesticide (common name and trade name) - Prodiamine (BARRICADE 65 WG; BARRICADE 4FL)

For label, material & if needed spray oil surfactant contact:

Syngenta, Dave Ross, (336) 632-6411, FAX# 336-632-2653; e-mail: david.ross@syngenta.com

Formulation- Use only EPA registered product

Experimental design:

Plot size (must be adequate to reflect actual use condition)

Replicates Minimum of 4 Treatment Units

Controls (untreated controls to be included in all experiments)

Application:

Dosages - 1x 0.65 lbs.ai/A

2x 1.5 lbs.ai/A

4x 3.0 lbs.ai/A

Volume - 20 to 100 gal./A

Timing - 2 per year(Interval)

Number Applications: 2

Reports:

Method of application: (treatments should be made over the top of the plants using application equipment consistent with conventional commercial equipment). Report completely on experimental design and method of application. Report the plant size height x width before treatment and through out the experiment.

Report completely on experimental design and method of application.

Weather - Maintain temperature and precipitation (including irrigation) data.

Soil type - Identify soil type used in experimental area.

Product - When submitting data, include EPA registration number of product used.

Efficacy - Data should include both actual counts and percent control as well as an indication that infestation was light, heavy, etc.

Record all application and evaluation dates.

Phytotoxicity - Record phytotoxicity data at all rates. Use a 0-10 scale. 0 = No Phytotoxicity 10 = complete kill.

If appropriate also include a rating for: Chlorosis, Percent of Defoliation (0-10 scale) and stunting or other growth effects (0-10). Indicate if marketable or not.

Please direct questions to: Ely Vea, 308 Aston Forest Lane, Crownsville, MD 21032, Phone & FAX#: 410-923-488, E-mail: evvea@comcast.net.

Appendix 2: Contributing Researchers

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Appendix 3: Submitted Data

Data on following pages are for select PRnumbers based on those crops not currently listed on prodiamine labels or for those crops listed on the labels under a section limiting prodiamine use to outside CA. These are arranged in PRnumber order with the exception of the study submitted by Phatak & Glaze.