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AGRICULTURAL RESEARCH COUNCIL
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SUSCEPTIBILITY OF ORNAMENTAL PLANTS TO
SIMAZINE AND OTHER CHEMICALS

TREES AND SHRUBS

BY

G.W. Ivens

Technical Report No. 1.

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Introduction

Herbicides have now been in use by nurserymen for several years and simazine in particular has come to be employed on a large scale. It is evident that many woody plants can be treated safely with doses of simazine sufficient to control annual weeds for most of the year, but all species are not equally tolerant and the following tables provide a summary of the information at present available on susceptibility.

As with all soil-applied herbicides, the effects of simazine are influenced by soil type and rainfall, plants grown on light, sandy soils or under heavy rainfall conditions being more liable to injury than those on heavier or more organic soils under dry conditions. It is therefore not surprising that, with many species, the evidence on susceptibility is conflicting. Rather than give a single assessment of susceptibility based on the most unfavourable response of the crop, an attempt has been made to indicate the probability of treatment causing injury by recording the number of observations on which it has had no effect, as well as the occasions on which injury has resulted.

The observations refer to treatments applied as overall sprays to established plants at varying times of year. With a number of species, as indicated in the table, there is evidence that dormant season treatment is safer than treatment when young foliage is present, so that different application times may help to account for conflicting results. Indications are also given where there is evidence about the possibility of treating unrooted cuttings, newly planted transplants, seedbeds and potted plants in plunging beds. Most of the observations refer to simazine, but information on other chemicals is included where it is available.

The information is based partly on published data and partly on observations from nurseries in the south of England where herbicides have been tested. A complete survey of the literature has not been attempted, but most of the relevant European reports have been consulted and considerable use has been made of the J.R. Geigy S.A. Information Bulletin of 1959 on the effects of simazine on woody plants and of Annual Reports from the Dutch Tree Nursery Research Station at Boskoop (most of the information relating to the avoidance of overall spraying in spring originates from Boskoop). A list of references is given after the susceptibility tables.

Grateful acknowledgement is due to the many nurserymen who have risked, and occasionally lost, valuable plants in testing herbicides and I am especially indebted to the following for supplying much of the information on which these tables are based:- Messrs. Blooms Nurseries, Ltd., Messrs. Hillier & Sons, Messrs. Walter C. Slocock, Ltd., and Messrs. John Waterer, Sons & Crisp, Ltd.

W.R.O. Technical Report No. 1.

Revised November, 1964.

Susceptibility of ornamental plants to
simazine and other chemicals

TREES AND SHRUBS

By

G.W. Ivens
A.R.C. Weed Research Organisation

Preface to revised edition

The attached tables are a summary of the information currently available on the susceptibility of woody nursery stock to simazine and other herbicides.

The report was originally issued in November 1963 and it was intended that it should be revised every two years. In view of the large demand for the report, however, and the large amount of additional information which has been accumulated, it has been thought desirable to issue this first revision after only one year.

Tables dealing with a range of annual, biennial and perennial herbaceous flowers are approaching completion.

The author would still be glad to receive reports from growers or advisory officers relating to experience with herbicides on any type of ornamental plant, whether already included in the list or not. Information will be equally welcome, whether it agrees or disagrees with that presented here, but, in order to prevent undue prominence being given to exceptional results, it would be appreciated if reports could be confined to first-hand experience with the species concerned.

If further copies are required they may be obtained from:-

The Information Section,
A.R.C. Weed Research Organisation,
Begbroke Hill,
Kidlington,
Oxford.

Key to Table

Effects of simazine

Observations refer to doses of 1 - 2 lb/ac of active material applied as an overall spray to plants established for at least 3 months.

- r = resistant - no effect noted.
- ss = slightly susceptible - slight, temporary chlorosis.
- ms = moderately susceptible - more extensive chlorosis or slight reduction of growth.
- vs = very susceptible - serious injury or growth reduction.
- Species name underlined = species regarded as relatively susceptible to simazine.
- r etc. = single observation
- r etc. = two observations
- R etc. = three observations
- R etc. = four or more observations
- R* = widely treated in practice, normally without occurrence of damage.
- c = unrooted cuttings unaffected.
- ϕ = unrooted cuttings more liable to injury
- t = newly planted transplants unaffected.
- ϕ = newly planted transplants more liable to injury.
- D = treatment in dormant season or directed application advisable; young foliage appears sensitive.
- P = plants in pots; treatment applied to plunging bed.
- S = pre-emergence application possible on seedbeds.
- E = evergreen species.
- 5, 10 etc. = 5 or 10 lb/ac. has been used without causing injury.
- ϕ , 1 ϕ etc. = 5 or 10 lb/ac. has caused injury.

Effect of other chemicals

<u>Diuron and monuron</u>	1 - 2 lb/ac. applied as for simazine
<u>CIPC</u>	Chlorpropham 1 - 2 lb/ac. applied in autumn or winter.
<u>Paraquat</u>	1 lb/ac. as overall spray on deciduous species in dormant season. It can be assumed that a directed spray is essential on evergreens or on deciduous species in the growing season
<u>Dalapon</u>	5 - 10 lb/ac. applied during early spring or autumn as directed spray to well established trees. Winter treatment is probably safer but only effective against annual grasses, not couch.

Table of susceptibilities

A. Broad-leaved trees, shrubs and climbers

Species		Simazine 1 - 2 lb/ac	Other chemicals
E	Abelia x grandiflora	r P	
E	Acacia baileyana (Mimosa)	r P	
	Acanthopanax sieboldianus	r,ms D	
-	Acer campestre (Maple)	<u>R</u> 5	diuron r, CIPC r
	" capillipes	<u>r</u>	paraquat r
	" cappadocicum (= colchicum)	<u>r</u>	
-	" ginnala		paraquat ms
	" glabrum	r	paraquat r
	" grosseri hersii	r	paraquat r
	" lobelii	r	
	" negundo (Box Elder)	<u>r</u>	
	" palmatum vars. (Japanese Maple)	<u>ms,r,vs,ss</u> D	CIPC r
	" platanoides (Norway Maple)	<u>R,ms,ss</u>	diuron r,ms D, CIPC <u>r</u> , dalapon r D
	" pseudo-platanus (Sycamore)	<u>R</u> 5	
	" rubrum (Scarlet Maple)	<u>r</u>	paraquat r
	" rufinerve	<u>r</u>	paraquat r
	" saccharinum (Silver Maple)	<u>r</u>	paraquat r
	Aesculus hippocastanum (Horse Chestnut)	R	CIPC/fenuron ss
	" indica (Indian Horse Chestnut)	<u>r</u>	paraquat r
	" pavia (Red Buckeye)	<u>r</u>	
	Ailanthus altissima (= glandulosa) (Tree of Heaven)	R t	
	" vilmoriniana	r	paraquat r
	Alnus cordata (Italian Alder)	r	
	" glutinosa (Alder)	R	CIPC r
	" incana (Grey Alder)	r,ms	
	Amelanchier canadensis (Snowy Mespilus)	R	CIPC vs P
	" ovalis	r	
	Amorpha fruticosa (False Indigo)	R t	paraquat r

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Ampelopsis brevipedunculata	r	
E	Andromeda polifolia (Bog Rosemary)	ms	
	Aralia chinensis (Chinese Angelica Tree)	r	
E	Arbutus unedo (Strawberry Tree)	r	
E	Aucuba japonica (Japanese Laurel)	R	
	Azalea - see Rhododendron		
	Baccharis halimifolia (Groundsel Bush)	-	CIPC/fenuron vs
	Berberis aggregata	r	
E	" buxifolia (= dulcis)	r	
E	" candidula	<u>r</u>	
E	" darwinii	<u>r</u> , ss	CIPC/fenuron ss
E	" gagnepainii	r	
E	" hakeoides	r	
E	" hookeri (= wallichiana)	r	
E	" insignis	r	
E	" x irwinii	r	
E	" linearifolia	<u>r</u>	
	" prattii	r	
E	" pruinosa	r	
E	" sargentiana	r	
E	" x stenophylla	<u>r</u>	
	" thunbergii	<u>R</u> *, ss	CIPC r, ss
	" " 'Atropurpurea'	<u>R</u>	
E	" valdiviana	r	
E	" verruculosa	r	
	" vulgaris (Barberry)	<u>r</u> δ	
	" " 'Purpurifolia'	r	
	" wilsonae	<u>r</u>	
	" unspecified	R	monuron r D, CIPC r
	Betula ermanii	r	
	" papyrifera (Paper Birch)	r	
	" pendula (Silver Birch)	<u>R</u> *, ms δ δ	
	" pubescens (Birch)	<u>R</u> , <u>vs</u> , <u>ss</u> δ	
	" utilis	r	
	Bougainvillea glabra	ss P	
	Buddleia davidii	<u>R</u> , ss D	paraquat r

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Buddleia globosa (Orange Ball Tree)	<u>r</u>	
	" x weyeriana	<u>r</u>	
E	Buxus sempervirens (Box)	R ms ϕ	CIPC ms (cuttings)
E	" unspecified	<u>r</u> ms ϕ	CIPC r. diuron r
	Callicarpa bodinieri giraldii	R ms D	CIPC/fenuron ms
	" dichotoma (= koreana)	r	
E	Calluna vulgaris (Heather)	R ϕ	atrazine ms, CIPC ss
	Calycanthus fertilis (Allspice)	r	
E	Camellia japonica	<u>r</u> ss	
	Caragana arborescens (Pea Tree)	<u>R</u> ms D t	diuron r, CIPC <u>r</u>
	" boisii	<u>r</u>	paraquat r
	" pygmaea	<u>r</u>	
	Carpinus betulus (Hornbeam)	<u>R</u>	
	Caryopteris x clandonensis	r ss P	
	Cassinia fulvida (Golden Heather)	r	
	Castanea sativa (Spanish Chestnut)	<u>R</u> * $7\frac{1}{2}$ S	CIPC r S
	Catalpa bignonioides (Indian Bean Tree)	r	paraquat ss
	Ceanothus 'Gloire de Versailles'	<u>r</u> P	
	" unspecified	<u>r</u> P	
	Celtis australis	r	
	" occidentalis (Hackberry)	r	
	Ceratostigma willmottianum (Plumbago)	r P	
	Cercis canadensis (Redbud)	ms	
	" chinensis	-	CIPC/fenuron vs
	" siliquastrum (Judas Tree)	<u>r</u>	
	Chaenomeles japonica (= Cydonia maulei)	R	CIPC r
	" speciosa (= Cydonia japonica) (Japonica)	<u>R</u>	CIPC r
	" x superba	r	

Species	Simazine 1 - 2 lb/ac	Other chemicals
Chimonanthus praecox (= fragrans) (Winter Sweet)	<u>r</u>	
Chionanthus retusa	r	paraquat r
" virginicus (Fringe Tree)	r	
E Choisya ternata (Mexican Orange Blossom)	r,ss P	CIPC ss
Cladrastis lutea (Yellow Wood)	r	paraquat r
Clematis heracleifolia	ss P	CIPC ms
" hybrids (Patens group)	vs P	CIPC ss
" vitalba (Old Man's Beard)	r	
Clerodendron trichotomum	r	
Colutea arborescens (Bladder Senna)	<u>R</u>	atrazine r
" orientalis	r	
Cornus alba (Red-barked Dogwood)	<u>R</u> ,ms D	CIPC ms
" alternifolia	r	
" amomum (Silky Dogwood)	r	
" florida (Flowering Dogwood)	R	CIPC r, dalapon r
" " rubra	r,ms	
" kousa	<u>r</u>	
" mas (Cornelian Cherry)	<u>R</u> t	CIPC r
" " 'Elegantissima'	r t	CIPC r
" sanguinea (Common Dogwood)	R,ss	
" stolonifera flaviramea	<u>r</u>	
" unspecified	<u>r</u> ,ms D and ss P	CIPC/fenuron ms CIPC r P
Corylopsis pauciflora	<u>ss</u> ,r D	
Corylus avellana (Hazel)	R S	CIPC r S
" maxima 'Purpurea'	r,ss P and ss	CIPC r P
Cotinus coggygria (= Rhus cotinus Smoke Plant)	<u>R</u> and r P	CIPC vs P
Cotoneaster acutifolius	r t	diuron ms, dalapon r
" adpressus praecox	<u>r</u>	
E " amoenus	r	atrazine r, paraquat ss
" bullatus	r	
E " congestus	<u>r</u> 6	CIPC r

Species		Simazine 1 - 2 lb/ac	Other chemicals
E	Cotoneaster conspicuus decorus	r,ss D	
	" cooperi	r	
	" 'Cornubia'	r,ss	atrazine r, paraquat ss
E	" dammeri	r	
	" dielsianus (= applanatus)	r	atrazine r, paraquat ss
	" divaricatus	R	atrazine r, paraquat ss
E	" franchetii	R, ss	atrazine r, paraquat ss
E	" " sternianus (= wardii)	r,ss	
	" frigidus	R	
E	" henryanus	-	CIPC/fenuron ms
	" horizontalis	r	
	" integerrimus	ss	
E	" lacteus	r	
	" lucidus	r	
E	" microphyllus	R and r P	CIPC r P
	" multiflorus	r	
	" obscurus	r	
E	" salicifolius	R	atrazine r, paraquat ss CIPC/fenuron ms
	" simonsii	R	atrazine r, paraquat ss
	" tomentosus	r	atrazine r, paraquat ss
E	" turbinatus	ms	atrazine ms, paraquat ms
E	" x watereri	ss	
	" zabelii	r	
	" unspecified	R,ss D and r P	CIPC r, dalapon r
	Crataegus monogyna (Hawthorn)	R,ss	
	" oxyacanthoides (Hawthorn)	R,ss	CIPC r, diuron ss
	Cydonia oblonga (Quince)	R	
	" " (Quince rootstocks for pear)	R* 6 t c	CIPC r, diuron R atrazine r,ss
	Cytisus supinus	r	
	" unspecified	r P	
	Daphne mezereum (Mezereon)	r P	CIPC vs
E	" odora	r P	
E	" pontica	r	
	Decaisnea fargesii	r	CIPC/fenuron ms
	Deutzia chunii	ss	
	" 'Contraste'	r t	paraquat ss

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Deutzia x elegantissima	ss	paraquat ss
	" <u>gracilis</u>	MS, <u>ss</u>	
	" x kalmiaeflora	r	
	" x lemoinei	r	
	" 'Mont Rose'	r	
	" <u>x rosea</u>	r, ms, vs	
	" scabra (= crenata)	<u>r</u>	
	" " 'Candidissima'	ms	
	" " 'Macrocephala'	r	
	" " 'Plena'	ms	
	" " 'Watereri'	r	
	" unspecified	MS, ss c D	
	Diervilla sessilifolia	r	
	Diospyros lotus (Date Plum)	r	
	" virginiana (Persimmon)	ms	paraquat ms
	Elaeagnus angustifolia (Oleaster)	<u>r</u>	CIPC r
	" commutata (= argentea)	R	atrazine ss, paraquat ss
E	" x ebbingei	<u>r</u>	paraquat r
E	" macrophylla	<u>r</u>	
E	" pungens	r	paraquat r
	" unspecified	r, ss, ms D	
	Enkianthus, unspecified	r t	CIPC r, diuron ms
E	Erica carnea	<u>R</u> 5	
E	" cinerea (Bell Heather)	<u>R</u>	
E	" x darleyensis	<u>R</u> 5 t	
E	" tetralix (Cross-leaved Heath)	r	
E	" unspecified	R and r P	
E	Escallonia x langleyensis	r P	CIPC ms P
E	" organensis	ms P	
E	" unspecified	<u>r</u> P	
E	Eucalyptus rostrata	r P	
	<u>Euonymus alata</u>	<u>ms</u> D	
	" " <u>compacta</u>	ms	CIPC r 5
	" europaea (Spindle Tree)	<u>R</u> , ms, ss	diuron r, CIPC r
E	" fortunei (= radicans)	<u>r</u> , <u>ms</u> 5	
	" " 'Silver Queen'	r	
E	" japonica	<u>R</u> 5 c	CIPC/fenuron vs
	" oxyphylla	<u>r</u>	atrazine r, paraquat r

Species	Simazine 1 - 2 lb/ac	Other chemicals
Euonymus phellomana	ms	
" sachalinensis (planipes)	<u>r</u>	atrazine r, paraquat r
" unspecified	<u>R</u> , <u>ms</u> , vs $\neq$ D	CIPC r $\neq$, atrazine ms
Exochorda korolkowii	ss	
" racemosa	r	atrazine r, paraquat ms
" serratifolia	r	atrazine r, paraquat ms
Fagus grandifolia	r	
" sylvatica (Beech)	<u>R</u> *	dalapon r (dormant)
" " 'Pendula'	r	
" " 'Tricolor'	r	paraquat r
Forsythia x intermedia	<u>R</u> , <u>ms</u> , <u>ss</u> $\neq$ $\neq$	diuron r, CIPC r
" " 'Arnold Dwarf'	r	
" " 'Beatrix Farrand'	r	
" " 'Lynwood'	ms, r	
" " 'Spectabilis'	<u>ss</u> , <u>r</u>	
" ovata	ss, r	
" suspensa	<u>ms</u> , r	CIPC/fenuron vs
" viridissima	r	
" unspecified	<u>r</u> , <u>ms</u> , vs, <u>ss</u> D and ms P	CIPC <u>r</u> and r P
Fraxinus americana (White Ash)	r	
" excelsior (Ash)	<u>R</u> , <u>MS</u> , <u>ss</u> $\neq$	CIPC/fenuron ss
" " 'Aurea'	ss	CIPC ms
" (Golden Bark Ash)		
" ornus (Manna Ash)	r	paraquat r
Fuchsia gracilis	ss P	CIPC ms P
" magellanica	r	
Genista tinctoria (Dyer's Greenweed)	<u>r</u>	diuron r, CIPC r
" unspecified	r P	
Gleditschia unspecified	r t	CIPC r, atrazine r
E Griselinia littoralis	-	CIPC/fenuron ss
Gymnocladus dioicus (Kentucky Coffee Tree)	r	
Halimodendron halodendron	-	CIPC/fenuron ss
Hamamelis x intermedia	r	
" japonica	r	
" mollis (Witch Hazel)	<u>R</u> , <u>ss</u> D	CIPC r

Species	Simazine 1 - 2 lb/ac	Other chemicals
E Hebe albicans	r	paraquat ms
E " anomala	<u>r</u>	paraquat ms
E " armstrongii	<u>r</u>	
E " 'Autumn Glory'	R	paraquat ms
E " brachysiphon (= traversii)	R	paraquat ms
E " buxifolia	<u>r</u>	paraquat ms
E " colensii	<u>r</u>	paraquat ms
E " 'Ettrick Shepherd'	<u>r</u>	paraquat ms
E " x franciscana (= V. elliptica)	<u>r</u>	paraquat ms
E " haasti	r	paraquat ms
E " 'Hielan Lassie'	<u>r</u>	paraquat ms
E " 'Lindsayi'	<u>r</u>	paraquat ms
E " lycopodiodes	r	
E " 'Marjorie'	r,ms	paraquat ms
E " 'Midsummer Beauty'	r	
E " 'Mrs. Winder'	r	paraquat ms
E " pimelioides	r	
E " pinguifolia 'Pagei' (=V. pageana)	r	paraquat ms
E " salicifolia	<u>r</u>	paraquat ms
E " unspecified	ms P	
E Hedera colchica (Persian Ivy)	r t	
E " helix (Ivy)	R ♂	CIPC R, dalapon ms
Hedysarum multijugum	r	
Hibiscus syriacus	<u>R</u> * ♂	CIPC/fenuron ms
Hippophae rhamnoides (Sea Buckthorn)	<u>R</u> ,ms ♂	atrazine r, paraquat r
Hoheria lyalii	r	
Holodiscus discolor	r	
Hydrangea arborescens	r,ss D	
" macrophylla (= hortensis)	<u>r</u> ,ss	CIPC r P
" paniculata	<u>R</u> ,ss	paraquat r
" petiolaris (= scandens)	r,ss	
" serrata	and r P	
" unspecified	<u>R</u> ,ms D	CIPC r, diuron ms, atrazine r
E Hymenanthera crassifolia	r	
Hypericum androsaemum (Tutsan)	r	
E " calycinum (Rose of Sharon)	<u>r</u> ,ss	

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Hypericum elatum	ms	
	" frondosum	<u>r</u>	
E	" x moserianum	<u>r</u>	paraquat vs
E	" patulum	<u>r</u>	
E	" x penduliflorum	<u>r</u>	
	" unspecified	r and r P	CIPC r
E	Ilex x altaclarensis	r	
E	" aquifolium (Holly)	<u>R</u>	atrazine r, CIPC r
E	" crenata	<u>r,ss</u> /	diuron <u>ms</u> , atrazine r /
			CIPC r
E	" opaca (American Holly)	r	CIPC r, dalapon r
E	" platyphylla (Canary Island Holly)	r	
E	" unspecified	R	CIPC <u>r</u>
	Jamesia americana	r	
	Jasminum nudiflorum (Winter Jasmine)	<u>r</u>	
	Juglans regia (Walnut)	r 5 S	
E	Kalmia latifolia (Calico Bush)	r	CIPC r
E	" unspecified	r	
	Kerria japonica	R,ms and ss P	CIPC ms P
	Koelreuteria paniculata	r and ms P	CIPC ss P
	Kolkwitzia amabilis	<u>R</u> and r P	paraquat r, CIPC ss P
	Laburnocytisus adamii (Purple Laburnum)	-	paraquat vs
	Laburnum alpinum (Scotch Laburnum)	<u>r,ms</u> D	
	" anagyroides (Common Laburnum)	<u>R</u>	paraquat vs, CIPC/fenuron ss
	" x vossii	R	paraquat r,vs
	" x watereri	ms	
	" unspecified	r,ms D	monuron r D
E	Laurus nobilis (Bay Laurel)	r	
	Lavandula spica (Lavender)	R,ms,ss	
	Lespedeza bicolor	r	

Species		Simazine 1 - 2 bl/ac	Other chemicals
	<i>Lespedeza buergeri</i>	<u>r</u>	
	" <i>thunbergii</i> (Bush Clover)	<u>r</u>	
E	<i>Leucothoe catesbaei</i>	r	atrazine r, diuron r, CIPC r
	<i>Ligustrum amurense</i>	vs	
	" <i>ibota</i>	r	
	" <i>obtusifolium regelianum</i>	ms, ss	
	" <i>ovalifolium</i> (Privet)	SS, R, ms	D diuron ms, CIPC r
	" <i>ovalifolium 'Aureo-marginatum'</i> (Golden Privet)	r	
	" <i>quihoui</i>	r	
E	" <i>vulgare</i> (Common Privet)	<u>R</u> , <u>ss</u> , ms	D
	" unspecified	<u>R</u> , MS	CIPC <u>r</u> , ms diuron r <i>†</i> dalapon r
	<i>Liquidambar styraciflua</i> (Sweet Gum)	r	
	<i>Lonicera fragrantissima</i>	-	CIPC vs P
E	<i>Lonicera japonica</i>	ss	P
	" <i>korolkowii</i>	r	diuron r, CIPC r
E	" <i>nitida</i>	r and r	P CIPC r P
E	" <i>pileata</i>	<u>r</u> , ms	
	" <i>tartarica</i>	<u>R</u> , <u>ss</u> ,	D diuron r, CIPC r
	" <i>xylosteum</i> (Fly Honeysuckle)	ms, ss	
	" <i>yunnanensis</i>	r	
	" unspecified	r, ms, ss	
	<i>Lycium europaeum</i>	r	c
	" <i>halimifolium</i> (Tea Plant)	r	
	<i>Maackia amurensis</i> (= <i>Cladrastis amurensis</i>)	<u>r</u>	diuron r, CIPC r, paraquat r
	<i>Maclura pomifera</i> (Gage Orange)	r	
	<i>Magnolia liliflora</i>	r	
	" x <i>soulangiana</i>	<u>r</u>	
	" <i>stellata</i>	<u>r</u>	
	" unspecified	<u>r</u>	CIPC r, dalapon r
E	<i>Mahonia aquifolium</i> (Barberry)	<u>R</u>	
E	" <i>bealei</i>	<u>r</u>	P
E	" <i>japonica</i>	r	
E	" unspecified	r	P monuron r, CIPC r P

Species	Simazine 1 - 2 lb/ac	Other chemicals
Malus floribunda (Japanese Crab)	<u>r</u>	
" sylvestris (= pumila)	<u>r</u>	
" 'Pendula' (Weeping Crab)		
" sylvestris rootstocks	<u>R</u> * c t	atrazine r, ss, diuron <u>r</u> CIPC ³ <u>ss</u> , <u>r</u>
" unspecified ornamental vars.	<u>R</u> t	atrazine r, diuron r, CIPC r
E Nandina domestica	r P	
E Nerium oleander (Oleander)	r P	
Neviusa alabamensis (Snow Wreath)	r	
E Olearia haastii (Daisy Bush)	r	
E " unspecified	-	CIPC/fenuron ms
E Osmanthus ilicifolius	<u>r</u>	
E X Osmarea burkwoodii	-	CIPC/fenuron ms
Osmaronia (Nuttallia) cerasiformis	r	
Ostrya virginiana (Ironwood)	r	paraquat r
E Pachysandra terminalis	r	diuron r, CIPC r
Paliurus spina-christi	r	
Parrotia persica	r	
Peraphyllum ramosissimum	r	
E Pernettya mucronata	r	
Phellodendron amurense (Amur Cork Tree)	r	paraquat r
" chinense	r	paraquat r
" japonicum	r	paraquat r
Philadelphus 'Beauclerk'	r	
" 'Belle Etoile'	r	
" coronarius	<u>r</u> ,ms	atrazine ms, diuron ms
(Mock Orange)		CIPC r
" grandiflorus	<u>r</u>	
" x lemoinei	<u>R</u> ,ss	diuron r, CIPC r

Species	Simazine 1 - 2 lb/ac	Other chemicals
Philadelphus 'Virginal' " unspecified	r,ss and ss P R,ms,ss D	CIPC/fenuron ms
E Photinia glabra " villosa	r r	
Physocarpus opulifolius	<u>ss</u>	diuron ss, CIPC r
E Pieris japonica	R t	diuron r,ms, CIPC r
E Pittosporum tobira E " unspecified	r <u>r</u> P	
Platanus occidentalis (Buttonwood) " orientalis (Oriental Plane)	r r	atrazine r, diuron r, CIPC r paraquat r
Populus - cuttings " alba 'Pyramidalis' " nigra 'Italica' (Lombardy Poplar) " x regenerata " x robusta " x serotina (= canadensis) " (Black Italian Poplar) " simonii " tacamahaca (= balsamifera) " unspecified	<u>r</u> <u>r</u> ,ms ss <u>r</u> , ss r,ss r r <u>ms</u>	CIPC r CIPC r
Populus - rooted plants " alba " " 'Pyramidalis' " nigra (Black Poplar) " " 'Italica' " x robusta " x serotina (= canadensis) " tremula (Aspen) " unspecified	r r ms <u>r</u> r R ms R	diuron r, CIPC r, dalapon r D
Potentilla arbuscula " fruticosa (Cinque-foil) " " farreri " " 'Moonlight'	<u>r</u> <u>R</u> <u>r</u> r	
Prunus - trees " avium (Wild Cherry, Gean) " " (Fruiting cherries)	MS, <u>r</u> , <u>ss</u> D MS,R	paraquat r, diuron ms, CIPC/fenuron vs dalapon MS, diuron ms, CIPC r

Species		Simazine 1 - 2 lb/ac	Other chemicals
E	Prunus cerasifera (Cherry Plum)	<u>ss</u> , r	
	" domestica (Plum)	<u>R*</u> , <u>ss</u> , ms $\neq$ D	atrazine ms, diuron <u>r</u> , monuron vs, dalapon MS, r, vs
	" glandulosa (Dwarf Flowering Almond)	<u>r</u>	
	" incisa (Fuji Cherry)	r	
	" insititia (Bullace Plum)	ms	
	" laurocerasus (Cherry Laurel)	<u>R*</u> c and <u>R</u> , ss P	atrazine r, CIPC r and ss P
	" mahaleb (St. Lucie Cherry)	r, ms	diuron ms
	" padus (Bird Cherry)	R, ms	CIPC r, paraquat r
	" persica (Peach)	r, ms	dalapon vs
	" prostrata	r	
	" pumila (Sand Cherry)	<u>r</u>	
	" serotina	ss	
	" serrulata (Japanese Cherry)	r	
	" triloba (Dwarf Almond)	<u>r</u>	
	" unspecified Flowering Cherry	<u>R*</u> , ms D	dalapon <u>ms</u> , <u>r</u> D, CIPC r
Prunus - rootstocks			
	" avium	<u>R*</u> , ss	CIPC r, ss, diuron r, ms
	" cerasifera (Myrobalan)	<u>R</u> , ss c $\neq$	CIPC r, diuron ss
	" domestica (Brompton)	<u>R</u> , <u>ss</u> c	CIPC/fenuron ms, CIPC r
	" " (Common Plum)	ss	
	" insititia (Common Mussel)	R, ms, ss c	CIPC r, paraquat ss D
	" " (Damas C)	ss	CIPC/fenuron ms
	" " (St. Julien)	R c	diuron ss
	" munsoniana (Marianna)	R c	CIPC r
Pterocarya stenoptera		r	paraquat r
Punica granatum (Pomegranate)		r	
E	Pyracantha coccinea (Firethorn)	<u>ms</u> , r $\neq$	
E	" crenulata	r P	CIPC ss P
E	" duvallii	ms $\neq$	
E	" unspecified	<u>r</u> , ms D	
Pyrus communis (Fruiting pears)		<u>R*</u>	dalapon <u>R</u> , atrazine <u>R</u> , diuron <u>R</u>
	" (Pear rootstocks - see Cydonia oblonga)		
	" kawakami	r P	
Quercus borealis (= rubra) (Red Oak)		<u>r</u> 5 S	
	" coccinea (Scarlet Oak)	r	

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Quercus petraea (Durmast Oak)	<u>R</u> *	S
	" robur (Common Oak)	<u>R</u> *	S
	" " 'Fastigiata'	<u>r</u>	
	" unspecified	<u>r</u>	S
			monuron r, dalapon r
E	Rhamnus alaternus	r	
	" californica (Coffee Berry)	r	
	" cathartica (Buckthorn)	<u>r</u>	t
	" frangula (= Frangula alnus)	<u>R</u>	
	" pumila	-	
			CIPC/fenuron ms
E	Rhododendron 'Boule de Neige'	r	
E	" 'Britannia'	r	CIPC r
E	" carolinianum	r,ms	/
E	" catawbiense	r	t
E	" ponticum	<u>r</u>	
E	" x praecox	<u>r</u>	
E	" unspecified types	<u>R</u>	
			CIPC r, dalapon r,ms D
	Rhododendron, Azalea series		
	Evergreen types		
E	" indicum	-	
E	" kaempferi	-	
E	" Kurume varieties	<u>R</u> ,ms	/
E	" obtusum	-	
E	" simsii eriocarpum	<u>r</u>	
E	" unspecified	<u>r</u>	5
	Deciduous types		
	" Ghent hybrids	R and ss P	
	" Knaphill hybrids	<u>r</u>	
	" Mollis types	R,ms	
	" Occidentalis hybrids	<u>r</u>	
	" roseum	r	
	" schlippenbachii	ms	/
	" unspecified	r	5
	Rhus glabra (Smooth Sumach)	<u>r</u>	
	" typhina (Stags Horn Sumach)	<u>R</u>	
	Ribes alpinum (Mountain Currant)	R,ss	
	" americanum (= floridum)	r	c
	" divaricatum	r	

Species	Simazine 1 - 2 lb/ac	Other chemicals
Ribes nigrum (Blackcurrant)	<u>R*</u> 5 t c	dalapon <u>R</u> , CIPC R, diuron R, atrazine R, paraquat <u>MS</u> D
" odoratum (= aureum)	<u>r</u> , ss	
" petraeum	<u>r</u> c	
" sanguineum (Flowering Currant)	<u>R</u> , vs, ss and ss P	CIPC r P
" sylvestre (Redcurrant)	<u>R*</u>	dalapon R, ms, atrazine <u>r</u>
" uva-crispa (= grossularia) (Gooseberry)	<u>R*</u> c	dalapon <u>ss</u> , diuron <u>R</u> paraquat <u>R</u> , CIPC <u>R</u> , atrazine r
Robinia hispida (Rose Acacia)	r, vs	
" pseudacacia (Acacia)	R, ss	
" unspecified	r, ms D	
Rose rootstocks		
Rosa assayi	<u>r</u> c	CIPC r c
" canina	<u>R*</u> δ t	atrazine ss, ms, 2,4-DES <u>R</u> diuron ss, CIPC R, ms, ss dalapon (4lb/ac. dormant) r, ms
" indica	<u>r</u>	
" laxa	<u>R*</u> δ	
" manetti	<u>r</u>	
" multiflora (Simplex)	<u>R*</u> , SS, ms c D	atrazine ms, paraquat ms dalapon ms
" rugosa	<u>R</u> , ms, ss D	CIPC r, ms dalapon r
Budded roses on various rootstocks	<u>R*</u>	atrazine SS, ms diuron <u>r</u> CIPC R, ss D, 2,4-DES <u>R</u> dalapon (4lb/ac dormant) <u>r</u> , ms
Shrub roses		
Rosa multiflora	<u>r</u> , ss	
" unspecified	<u>R</u>	atrazine r, vs D, diuron r CIPC r, ms, dalapon r, ms
E Rosmarinus officinalis (Rosemary)	r	
Rubus deliciosus	<u>r</u>	
" fruticosus (Blackberry)	<u>R*</u>	diuron r, CIPC r, dalapon r, atrazine r
" idaeus (Raspberry)	<u>R*</u>	atrazine <u>R</u> δ D, CIPC <u>MS</u> , R dalapon (4lb/ac) Nov-Dec. R other times <u>MS</u> diuron <u>R</u> , paraquat <u>R</u> D

Species		Simazine 1 - 2 lb/ac	Other chemicals
Salix alba (White Willow)	<u>r</u>		
" " 'Chermesina'	-		paraquat r
" " 'Tristis'	-		paraquat r
" cinerea (Common Sallow)	r	c	diuron r, CIPC ms c,
" x caerulea (Cricket-bat willow)	-		paraquat r
" purpurea (Purple Osier)	r		diuron r, CIPC r
" repens (Creeping Willow)	r	c	
" x smithiana	r	c	
" triandra (Almond Leaved Willow)	R		diuron r, dalapon r
" viminalis (Common Osier)	r	c	
" unspecified	<u>R*</u> ,ms and vs	P	monuron ms, dalapon R D CIPC ss P
Sambucus canadensis (American Elder)	ms		
" nigra (Elder)	R		paraquat r
" racemosa (Red Elder)	r		paraquat r
" unspecified	r		
E Sarcococca ruscifolia	r		
E <u>Senecio greyi</u>	vs		
E " <u>monroi</u>	vs		
E Skimmia japonica	<u>r</u> and r	P	
E " reevesiana	r		
Sorbaria aitchisonii	r		
" assurgens	r		
" sorbifolia	r		
Sorbus aria (White Beam)	R		paraquat r
" aucuparia (Rowan)	<u>R*</u> ,ss		
" domestica (Service Tree)	<u>r</u>		paraquat r
" hupehensis	r		paraquat r
" insignis	r		paraquat r
" intermedia (Swedish White-beam)	R		
" vilmorinii	<u>r</u>		paraquat r
" unspecified	-		CIPC r
Spartium junceum (Spanish Broom)	r,ms		
Spiraea x arguta (Foam of May)	R	✓	
" x bumalda	<u>r</u>		
" " Anthony Waterer	R	c	
" " Froebellii	<u>vs,ss,r</u>		

Species	Simazine 1 - 2 lb/ac	Other chemicals
Spiraea douglasii	<u>r</u> δ	
" japonica	<u>r</u>	
" x margaritae	<u>r</u>	
" media	<u>ms</u> r	diuron ms, CIPC r
" menziesii 'Triumphans'	<u>r</u>	
" prunifolia	vs r δ	
" x sanssouciana	r	
" thunbergii	r	
" trichocarpa	ss	diuron ss, CIPC r
" vanhouttei	<u>R</u> ms	
" unspecified	<u>R</u> <u>ms</u> ss D	CIPC/fenuron ms
Staphylea elegans (Bladder Nut)	r	CIPC/fenuron ms
Stephanandra incisa	r ss	
" tanakae	r	
E Stranvaesia dividiiana	<u>R</u> ms D and r P	atrazine r, paraquat ss CIPC/fenuron ms, CIPC r P
E Sycopsis sinensis	r	
Symphoricarpus albus (Snowberry)	<u>R</u> ss c	
" chenaultii	<u>r</u> vs D	
" orbiculatus (Coral Berry)	<u>R</u> ms c	dalapon vs
" 'White Hedge'	r	
" unspecified	<u>r</u> ms c D	
Syringa x chinensis (Rouen Lilac)	<u>R</u> ss t D	diuron ms, atrazine ms dalapon r
" josikaea (Hungarian Lilac)	vs	
" microphylla	<u>r</u>	
" x prestoniae	r ms	diuron ms, CIPC r
" sweginzowii	ms	
" vulgaris (Common Lilac)	R vs ms δ	paraquat vs
" wolffii	ms	
" unspecified	MS <u>r</u> <u>ss</u> vs D	
Tamarix gallica (Tamarisk)	r	
" parviflora	<u>r</u> c	
" pentandra	<u>r</u>	
Tillia condata (European Lime)	<u>r</u> ms ss	paraquat r
" platyphyllos (large Leaved Lime)	<u>ms</u> r	paraquat r
" unspecified	r	

Species		Simazine 1 - 2 lb/ac	Other chemicals
	Ulmus americana (White Elm)	<u>r</u>	
	" procera (English Elm)	<u>r</u>	paraquat r
	" " 'Viminalis'	<u>r</u>	
	" pumila (Dwarf Elm)	<u>r</u>	paraquat r
	" unspecified	<u>r</u>	paraquat r
	Vaccinium corymbosum (High-bush Blueberry)	<u>r</u>	
	Viburnum betulifolium	<u>r</u>	
	" x bodnantense	<u>r</u> ,ms	atrazine r, paraquat ss
E	" x burkwoodii	<u>r</u> ,ss	paraquat r
	" x carlcephalum	<u>R</u>	
	" carlesii	<u>r</u>	
	" corylifolium	<u>r</u>	
	" erubescens	<u>r</u>	
E	" foetidum	ss	atrazine r, paraquat ss
	" fragrans	<u>ss</u> ,ms	paraquat ms
	" grandiflorum	<u>r</u>	
E	" harryanum	<u>r</u>	
E	" henryi	<u>r</u>	paraquat r
	" hillieri	ss	
	" hupehense	<u>r</u>	
	" x juddii	<u>r</u>	atrazine r, paraquat ss
	" lantana (Wayfaring Tree)	<u>r</u> ,ms	
	" lentago (Sheepberry)	<u>r</u>	
	" macrocephalum	<u>r</u>	
	" opulus (Guelder Rose)	<u>R</u> ,ss	
	" " 'Compactum',	ms	atrazine r, paraquat ss
	" " 'Nanum'	ms	
	" " 'Sterile'	<u>r</u>	
	(Snowball Tree)		
E	" rhytidophyllum	<u>R</u>	
E	" suspensum	<u>r</u>	atrazine r, paraquat ss
E	" tinus (Laurustinus)	<u>r</u> ,ms,ss	
	" tomentosum	<u>R</u> ,ms	
	" unspecified	<u>R</u> ,ms and ms	CIPC <u>r</u> and ss
E	Vinca minor (Periwinkle)	<u>R</u>	CIPC <u>r</u> ,ms
	Vitex agnus-castus	<u>r</u>	
	Weigelia florida	<u>r</u> ,ss	paraquat ss
	" garden hybrids	<u>R</u>	CIPC r
	" middendorffiana	<u>r</u>	
	" unspecified	<u>R</u>	CIPC/fenuron ms

	Simazine 1 - 2 lb/ac	Other chemicals
Wistaria sinensis	<u>r</u>	
W Yucca filamentosa	r	
E " flaccida	r	
E " recurvifolia	r	
E " whipplei	r	

B. Conifers

E	Abies alba (= A. pectinata) (Silver Fir)	<u>R</u> ,ss		CIPC r
E	" balsamea (Balsam Fir)	-		diuron vs, dalapon ms
E	" concolor	<u>r</u>		
E	" grandis (Giant Fir)	<u>R</u> *,ss		oil (seedlings) <u>R</u>
E	" homolepis (Silver Fir)	ms	≠	
E	" nordmanniana (Caucasian Fir)	<u>R</u> ,ms		
E	" procera (= A. nobilis) (Noble Fir)	<u>R</u> *		oil (seedlings) <u>R</u>
E	" unspecified	R		CIPC r
E	Araucaria araucana (= A. imbricata) (Monkey Puzzle)	<u>r</u>		CIPC r
E	Cedrus atlantica (Atlas Cedar)	<u>R</u>		
E	" " 'Glauca' (Blue Cedar)	<u>r</u> and r	P	CIPC r P
-E	" deodara (Deodar)	<u>R</u> 5	t	
E	" " 'Aurea' (Golden Deodar)	<u>r</u>		
•E	" unspecified	R		monuron r, CIPC r
E	Chamaecyparis lawsoniana (Lawson's Cypress)	<u>R</u> * 5		oil (seedlings) <u>R</u> prometryne r, paraquat ms
E	" " 'Allumii'	R and r	P	CIPC r P
E	" " 'Ellwoodii'	<u>R</u> 5		CIPC r, atrazine r
E	" " 'Fletcheri'	<u>R</u> 5	t	
E	" " 'Pottenii'	<u>r</u>		
E	" " 'Stewartii'	<u>r</u>		
E	" " 'Triomphe de Boskoop'	<u>r</u>		
E	" obtusa 'Juniperoides'	<u>r</u>		monuron r
E	" " 'Nana'	r		
E	" " 'Tetragona Aurea'	r		
E	" pisifera 'Filifera'	<u>r</u>		
E	" " 'Plumosa Aurea'	<u>R</u> 5 and r	t P	diuron ms

Species		Simazine 1 - 2 lb/ac	Other chemicals
E	Chamaecyparis pisifera 'Plumosa		
	Aurea Compacta'	r	
E	" " squarrosa	<u>r</u> and r P	
E	" unspecified	<u>R</u> 5 t	CIPC R
E	Cryptomeria japonica (Japanese Cedar)	<u>r</u>	prometryne r, paraquat ms
E	x Cupressocyparis leylandii	r	
E	Cupressus arizonica (Arizona Cypress)	r, ss t	
E	" " 'Pyramidalis'	r	
E	" macrocarpa (Monterey Cypress)	R 5	prometryne r, paraquat ms
E	" sempervirens (Italian Cypress)	<u>r</u> 5	
E	" " 'Horizontalis'	r	
E	" " 'Stricta'	r	
E	" unspecified	<u>r</u>	CIPC <u>r</u>
	Ginkgo biloba (Maidenhair Tree)	R	
E	Juniperus chinensis, (Chinese Juniper)	<u>r</u> t	atrazine r, diuron r CIPC r, dalapon r
E	" " 'Pyramidalis'	r	
E	" communis (Juniper)	R	
E	" " depressa	r P	prometryne r, paraquat ms
E	" " hibernica	r	
E	" " suecica	r and r P	
E	" horizontalis (Creeping Juniper)	r and r P	atrazine r, diuron r, CIPC r
E	" " douglasii	r and ms P	
E	" " plumosa	r and r P	
E	" x media 'Globosa Cinerea' (Blaauw's Variety)	r	
E	" " pfitzeriana	<u>r</u> P	
E	" " 'Aurea'	<u>r</u>	
E	" " plumosa 'Aurea'	r	
E	" sabina (Savin)	<u>r</u> 5 and r P	CIPC r, atrazine r
E	" " 'Hetzii'	<u>r</u>	
E	" " tamariscifolia	<u>r</u> and r, ss P	
E	" squamata meyeri	<u>R</u> 5	CIPC r, atrazine r
E	" virginiana (Pencil Cedar)	<u>r</u> and r P	
E	" unspecified	<u>R</u> 5 and r P	CIPC r and r P

Species	Simazine 1 - 2 lb/ac	Other chemicals
Larix decidua (= L. europaea) (Common Larch) " x eurolepis (Hybrid Larch) " leptolepis (Japanese Larch) " unspecified	<u>R</u> <u>SS</u> <u>ms</u> $\neq$ <u>R</u>* <u>R</u>* <u>ss</u> <u>ms</u> $\neq$ <u>r</u> <u>ms</u> D	diuron <u>ms</u>, dalapon <u>ms</u> oil (seedlings) <u>SS</u> prometryne <u>r</u>, paraquat <u>ss</u> prometryne <u>ss</u>, paraquat <u>ss</u> oil (seedlings) <u>SS</u> CIPC <u>r</u>
E Picea abies (= P. excelsa) (Norway Spruce, Christmas Tree)	<u>R</u>* <u>ss</u> <u>ms</u>	CIPC <u>r</u>, atrazine <u>r</u>, oil (seedlings) <u>R</u>, dalapon <u>r</u> paraquat <u>r</u> (dormant)
E " albertiana conica (Alberta Spruce)	<u>r</u>	CIPC <u>r</u>, atrazine <u>r</u>
E " glauca (= P. alba) (White Spruce)	<u>r</u>	diuron <u>r</u>, dalapon <u>r</u>
E " mariana (= P. nigra) (Black Spruce)	<u>r</u>	
E " omorika (Serbian Spruce)	<u>R</u> <u>SS</u> D	
E " pungens (Colorado Spruce)	<u>R</u>	
E " " 'Glauca' (Blue Spruce)	<u>r</u>	diuron <u>r</u>, dalapon <u>r</u>
E " sitchensis (Sitka Spruce)	<u>R</u>*	oil (seedlings) <u>R</u>
E " unspecified	<u>R</u>	diuron <u>r</u> $\neq$, CIPC <u>r</u> dalapon <u>r</u> <u>ms</u>
E Pinus contorta (Lodgepole Pine)	<u>R</u>* <u>ss</u>	oil (seedlings) <u>SS</u>
E " griffithii (= P. excelsa) (Bhutan Pine)	<u>r</u>	
E " halepensis (Aleppo Pine)	<u>r</u> P	
E " monticola (Western White Pine)	<u>ss</u>	
E " mugo (Mountain Pine)	<u>R</u>	oil (seedlings) <u>R</u>, CIPC <u>r</u>
E " nigra austriaca (Austrian Pine)	<u>R</u> <u>ss</u>	diuron <u>r</u>, dalapon <u>r</u>
E " " calabrica (Corsican Pine)	<u>R</u>* <u>ss</u>	oil (seedlings) <u>R</u>, CIPC <u>r</u>
E " pinaster (Maritime Pine)	<u>r</u> <u>ss</u>	
E " radiata (= P. insignis) (Monterey Pine)	<u>r</u>	
E " strobus (Weymouth Pine)	<u>R</u> <u>ss</u>	
E " sylvestris (Scots Pine)	<u>R</u>* <u>ss</u>	oil (seedlings) <u>R</u> prometryne <u>r</u>, diuron <u>r</u> CIPC <u>r</u>, dalapon <u>r</u> <u>ms</u> paraquat <u>r</u>
E " unspecified	<u>R</u>	CIPC <u>r</u>, atrazine <u>r</u> diuron <u>r</u> $\neq$, dalapon <u>r</u>
E Pseudotsuga menziesii (= P. taxifolia) (Douglas Fir)	<u>R</u>*	oil (seedlings) <u>SS</u> prometryne <u>r</u>, diuron <u>r</u>
E " glauca	<u>ss</u>	dalapon <u>r</u>, paraquat <u>r</u>

Species	Simazine 1 - 2 lb/ac	Other chemicals
E Sequoia sempervirens (Californian Redwood)	r	
E Sequoiadendron giganteum (= Sequoia gigantea) (Wellingtonia)	r ss	
E Taxus baccata (English Yew)	<u>R</u> * 5	prometryne ss, paraquat ms
E " " 'Dovastoniana'	<u>r</u>	
E " " 'Repandens'	<u>r</u>	
E " cuspidata (Japanese Yew)	<u>R</u> ss t	atrazine r, diuron <u>ms</u> r
E " x media	<u>R</u> 5 t	CIPC <u>r</u> , dalapon <u>r</u> atrazine r, diuron <u>ms</u> r
E " " 'Hicksii'	<u>r</u>	CIPC r, dalapon <u>r</u>
E " unspecified	<u>R</u>	CIPC r, dalapon ms
E Thuja occidentalis (American Arbor-vitae)	<u>R</u> * 5	CIPC <u>r</u> , atrazine <u>r</u> diuron r ms, dalapon <u>ms</u>
E " " 'Ellwangeriana'	<u>r</u> r P	diuron r ms, CIPC r
E " " fastigiata	<u>R</u>	diuron r ms, CIPC r
E " " 'Rheingold'	<u>r</u> P	
E " plicata (= T. lobbii) (Western Arbor-vitae)	<u>R</u> * ss and r P	oil (seedlings) <u>R</u> CIPC r P, paraquat ms
E " " 'Zebrina'	<u>R</u>	prometryne r
E " unspecified	<u>r</u>	prometryne r, paraquat ms
E Tsuga canadensis (Eastern Hemlock)	<u>r</u> ms †	atrazine r, diuron r
E " heterophylla (Western Hemlock)	<u>R</u> *	CIPC r oil (seedlings) SS CIPC r

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