

SEWRPC Technical Report No. 62

IMPACTS OF CHLORIDE ON THE NATURAL AND BUILT ENVIRONMENT

Appendix C

RELATIVE SALT (NaCl) TOLERANCE OF SELECTED PLANTS

Table C.1
Relative Salt (NaCl) Tolerance of Selected Plants

Common Name	Scientific Name	Tolerance
Deciduous Trees		
Alder, European black	<i>Alnus glutinosa</i>	L-M
Alder, speckled	<i>Alnus rugosa</i>	L-M
Alder, white	<i>Alnus incana</i>	L
Apricot	<i>Prunus armeniaca</i>	H
Ash, blue	<i>Fraxinus quadrangulata</i>	M
Ash, European	<i>Fraxinus excelsior</i>	H
Ash, green	<i>Fraxinus pennsylvanica</i>	M-H
Ash, white	<i>Fraxinus americana</i>	L-H
Aspen, bigtooth	<i>Populus grandidentata</i>	M-H
Aspen, upright European	<i>Populus tremula</i>	H
Aspen, quaking	<i>Populus tremuloides</i>	L-H
Beech, American	<i>Fagus grandifolia</i>	L-M
Beech, European	<i>Fagus sylvatica</i>	L
Birch, Cherry	<i>Betula, lenta</i>	H
Birch, Dahurian	<i>Betula davurica</i>	L
Birch, European white	<i>Betula pendula</i>	M
Birch, gray	<i>Betula populifolia</i>	M-H
Birch, Japanese whitespire	<i>Betula platyphylla</i>	L-M
Birch, paper	<i>Betula papyrifera</i>	L-H
Birch, river	<i>Betula nigra</i>	M
Birch, yellow	<i>Betula alleghaniensis</i>	M
Box-elder	<i>Acer negundo</i>	L-M
Buckeye, Ohio	<i>Aesculus glabra</i>	M
Buckeye, yellow	<i>Aesculus octandra^a</i>	M
Buckthorn, common	<i>Rhamnus cathartica</i>	H
Butternut	<i>Juglans cinerea</i>	H
Catalpa, northern	<i>Catalpa speciosa</i>	M-H
Catalpa, southern	<i>Catalpa bignonioides</i>	M
Cherry, Amur choke	<i>Prunus maackii</i>	M
Cherry, black	<i>Prunus serotina</i>	L-H
Cherry, European bird	<i>Prunus padus</i>	M-H
Cherry, choke	<i>Prunus virginiana</i>	M-H
Cherry, Mazzard	<i>Prunus avium</i>	M
Cherry, pin	<i>Prunus pennsylvanica</i>	M
Cherry, sargent	<i>Prunus sargentii</i>	M
Chestnut, American	<i>Castanea dentata</i>	M
Coffeetree, Kentucky	<i>Gymnocladus dioicus</i>	M-H
Cork tree, Amur	<i>Phellodendron amurense</i>	M
Cottonwood, eastern	<i>Populus deltoides</i>	L-H
Crabapple, Siberian	<i>Malus baccata</i>	M
Cypress, bald	<i>Taxodium distichum</i>	H
Dogwood, flowering	<i>Cornus florida</i>	M
Elm, American	<i>Ulmus americana</i>	L-H
Elm, Chinese	<i>Ulmus parvifolia</i>	M
Elm, red	<i>Ulmus rubra</i>	M
Elm, Scotch	<i>Ulmus glabra</i>	M-H
Elm, Siberian	<i>Ulmus pumila</i>	H
Elm, smoothleaf	<i>Ulmus carpinifolia</i>	L-H

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Deciduous Trees (continued)		
False-cypress, Sawara	<i>Chamaecyparis pisifera</i>	L
Filbert, European	<i>Corylus avellana</i>	L
Filbert, Turkish	<i>Corylus colurna</i>	L
Ginko	<i>Ginko biloba</i>	M
Hackberry, common	<i>Celtis occidentalis</i>	L-M
Hackberry, sugar	<i>Celtis laevigata</i>	L
Hawthorn, cockspur	<i>Crateagus crus-galli</i>	L-H
Hawthorn, downy	<i>Crataegus mollis</i>	L
Hawthorn, green ^b	<i>Crateagus viridis</i>	L
Hawthorn, Washington	<i>Crataegus phaenopyrum</i>	L
Hickory, bitternut	<i>Carya cordiformis</i>	M-H
Hickory, pignut	<i>Carya glabra</i>	L-H
Hickory, shagbark	<i>Carya ovata</i>	L-H
Honey locust, thornless	<i>Gleditsia triacanthos</i>	L-H
Hornbeam, American	<i>Carpinus caroliniana</i>	L
Hornbeam, European	<i>Carpinus betulus</i>	L
Horse chestnut, common	<i>Aesculus hippocastanum</i>	M-H
Ironwood	<i>Ostrya virginiana</i>	M
Katsura tree	<i>Cercidiphyllum japonicum</i>	M
Larch, American	<i>Larix laricina</i>	L
Larch, European	<i>Larix decidua</i>	H
Larch, Japanese	<i>Larix kaempferi</i>	H
Lilac, Peking	<i>Syringa pekinensis</i>	H
Linden, American	<i>Tilia americana</i>	L-H
Linden, Crimean	<i>Tilia X euchlora</i>	L
Linden, large-leaved	<i>Tilia platyphyllos</i>	H
Linden, little-leaf	<i>Tilia cordata</i>	L-H
Locust, black	<i>Robina pseudoacacia</i>	H
Magnolia, cucumber tree	<i>Magnolia acuminata</i>	M
Magnolia saucer	<i>Magnolia X soulangiana</i>	M
Maple, Amur	<i>Acer ginnala</i>	M
Maple, black	<i>Acer nigrum^c</i>	L-M
Maple, box elder	<i>Acer negundo</i>	M
Maple, Freeman's	<i>Acer X freemanii</i>	M
Maple, hedge	<i>Acer campestre</i>	M-H
Maple, Miyabe's	<i>Acer miyabei</i>	M-H
Maple, Norway	<i>Acer platanoides</i>	H
Maple, paperbark	<i>Acer griseum</i>	M
Maple, purpleblow	<i>Acer truncatum</i>	M
Maple, red	<i>Acer rubrum</i>	L-M
Maple, silver	<i>Acer saccharinum</i>	L-H
Maple, sugar	<i>Acer saccharum</i>	L
Maple, sycamore	<i>Acer pseudoplatanus</i>	L-H
Mountain-ash, American	<i>Sorbus americana</i>	M
Mountain-ash, European	<i>Sorbus aucuparia</i>	L-M
Mulberry, red	<i>Morus rubra</i>	H
Mulberry, white	<i>Morus alba</i>	H
Oak, black	<i>Quercus velutina</i>	M
Oak, bur	<i>Quercus macrocarpa</i>	M-H
Oak, Chinkapin	<i>Quercus muehlenbergii</i>	L-M
Oak, English	<i>Quercus robur</i>	L-H
Oak, Hill's	<i>Quercus ellipsoidalis</i>	M
Oak, pin	<i>Quercus palustris</i>	L
Oak, post	<i>Quercus sellata</i>	M
Oak, red	<i>Quercus rubra</i>	L-H

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Deciduous Trees (continued)		
Oak, scarlet	<i>Quercus coccinea</i>	L
Oak, shingle	<i>Quercus imbricaria</i>	M
Oak, swamp white	<i>Quercus bicolor</i>	L-M
Oak, white	<i>Quercus alba</i>	L-H
Pagoda tree, Japanese	<i>Sophora japonica</i> ^e	L-H
Pawpaw	<i>Asimina triloba</i>	M
Peach	<i>Prunus persica</i>	L
Pear, Callery	<i>Pyrus calleryana</i>	M
Pecan	<i>Carya illinoensis</i>	M
Persimmon common	<i>Diospyros virginiana</i>	M
Plum, wild	<i>Prunus americana</i>	M-H
Poplar, big-tooth aspen	<i>Populus grandidentata</i>	H
Poplar, black	<i>Populus nigra</i>	H
Poplar, gray	<i>Populus canadensis</i>	H
Poplar, laurel	<i>Populus laurifolia</i>	L
Poplar, white	<i>Populus alba</i>	H
Raintree, golden	<i>Koelreuteria paniculata</i>	M
Redwood, dawn	<i>Metasequoia glyptostroboides</i>	L
Sassafras, common	<i>Sassafras albidum</i>	M
Spindletree, European	<i>Euonymus europaea</i>	L-H
Sweetgum, American	<i>Liquidambar styraciflua</i>	M-H
Sycamore	<i>Platanus orientalis</i>	L-M
Tree of Heaven	<i>Ailanthus altissima</i>	H
Tulip tree	<i>Liriodendron tulipifera</i>	L
Tupelo, black	<i>Nyssa sylvatica</i>	M
Walnut, black	<i>Juglans nigra</i>	M-H
Walnut, English	<i>Juglans regia</i>	M
Willow, black	<i>Salix nigra</i>	M-H
Willow, corkscrew	<i>Salix matsudana</i>	H
Willow, crack	<i>Salix fragilis</i>	L
Willow, weeping	<i>Salix alba</i>	L-H
Yellow wood	<i>Cladrastis lutea</i>	M
Deciduous Shrubs		
Barberry, Japanese	<i>Berberis thunbergii</i>	H
Barberry, Korean	<i>Berberis koreana</i>	H
Bayberry, northern	<i>Morella pennsylvanica</i>	M-H
Bearberry	<i>Arctostaphylos uva-ursi</i>	H
Beauty bush	<i>Kolkwitzia amabilis</i>	L
Boxwood, common	<i>Buxus sempervirens</i>	L
Buffalo berry	<i>Shepherdia argentea</i>	M-H
Burning bush	<i>Euonymus alatus</i>	H
Butterfly bush	<i>Buddleja davidii</i>	H
Chastetree	<i>Vitex agnus-castus</i>	H
Chokeberry, black	<i>Aronia melanocarpa</i>	M
Chokeberry, red	<i>Aronia arbutifolia</i>	M
Clethra, summersweet	<i>Clethra alnifolia</i>	M
Corralberry	<i>Symphoricarpos arbutifolius</i>	L
Cotoneaster, cranberry	<i>Cotoneaster apiculatus</i>	M
Cotoneaster, hedge	<i>Cotoneaster acutifolius</i>	M
Cotoneaster, many-flowered	<i>Cotoneaster multiflorus</i>	M
Cotoneaster, rockspray	<i>Cotoneaster horizontalis</i>	M
Cotoneaster, spreading	<i>Cotoneaster divaricatus</i>	M
Currant, alpine	<i>Ribes alpinum</i>	H
Currant, black	<i>Ribes nigrum</i>	M-H
Currant, clove	<i>Ribes odoratum</i>	H

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Deciduous Shrubs (continued)		
Dogwood, correllianchery	<i>Cornus mas</i>	L
Dogwood, pagoda	<i>Cornus alternifolia</i>	M
Dogwood, gray	<i>Cornus racemosa</i>	L
Dogwood, red osier	<i>Cornus sericea</i>	L
Dogwood, Siberian	<i>Cornus alba</i>	L
Firethorn, scarlet	<i>Pyracantha coccinea</i>	H
Forsythia	<i>Forsythia X intermedia</i>	M
Fuchsia	<i>Fuchsia hybrida</i>	S
Hawthorn, English	<i>Crataegus levigata</i>	L
Hawthorn, dotted	<i>Crataegus punctata</i>	L
Hydrangea, bigleaf	<i>Hydrangea macrophylla</i>	H
Indigo-bush	<i>Amorpha fruticosa</i>	H
Jetbead, black	<i>Rhodotypos scandens</i>	H
Juneberry	<i>Amelanchier canadensis</i>	M
Lilac, common	<i>Syringa vulgaris</i>	L-H
Lilac, Japanese tree	<i>Syringa reticulata</i>	M
Lilac, Miss Kim	<i>Syringa pubescens</i>	M
Lilac, Palibin	<i>Syringa meyeri</i>	M
Locust, bristly	<i>Robinia hispida</i>	H
Maple, Amur	<i>Acer ginnala</i>	L-M
Maple, Japanese	<i>Acer palmatum</i>	M
Maple, Tatarian	<i>Acer tataricum</i>	L
Mockorange	<i>Philadelphus coronarius</i>	M
Mountain-ash, showy	<i>Sorbus decora</i>	H
Ninebark, dwarf eastern	<i>Physocarpus opulifolius</i>	L-M
Osage-orange	<i>Maclura pomifera</i>	M
Pea-shrub, Siberian	<i>Caragana arborescens</i>	H
Plum, beach	<i>Prunus maritima</i>	H
Potentilla	<i>Dasiphora fruticosa</i>	H
Privet, common	<i>Ligustrum vulgare</i>	L-M
Quince, flowering	<i>Chaenomeles speciosa</i>	L-M
Redbud	<i>Cercis canadensis</i>	L
Rose, dog	<i>Rosa canina</i>	L
Rose, rugosa	<i>Rosa rugosa</i>	L-H
Rose, Virginia	<i>Rosa virginiana</i>	L-H
Russian olive	<i>Elaeagnus angustifolia</i>	H
Sage, Russian	<i>Perovskia atriplicifolia</i>	H
Salt tree	<i>Halimodendron halodendron</i>	H
Sandcherry, eastern	<i>Prunus pumila</i>	H
Serviceberry, apple	<i>Amelanchier X grandiflora</i>	L-H
Serviceberry, shadblow	<i>Amelanchier arborea</i>	M
Serviceberry, Allegheny	<i>Amelanchier laevis</i>	M
Shrub bush clover	<i>Lespedeza bicolor</i>	H
Skunkbush	<i>Rhus trilobata</i>	H
Snowberry	<i>Symphoricarpos albus</i>	M-H
Spiraea, Japanese	<i>Spiraea japonica</i>	M
Spiraea, snowmound	<i>Spiraea nipponica</i>	M
Spiraea, Vanhoutte	<i>Spiraea X vanhouttei</i>	
Sprite	<i>Hippophae rhamnoides</i>	H
St. Johnswort, Kalm's	<i>Hypericum kalmianum</i>	H
Sumac, fragrant	<i>Rhus aromatica</i>	H
Sumac, smooth	<i>Rhus glabra</i>	M-H
Sumac, staghorn	<i>Rhus typhina</i>	H
Sumac, winged	<i>Rhus copallina</i>	H
Sweet-fern	<i>Comptonia peregrina</i>	H

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Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Deciduous Shrubs (continued)		
Tamarisk	<i>Tamarix chinensis</i>	H
Virburnum, Arrowwood	<i>Viburnum dentatum</i>	M
Virburnum, American cranberrybush	<i>Viburnum opulus</i>	M
Virburnum, blackhaw	<i>Viburnum prunifolium</i>	M
Virburnum, Nannyberry	<i>Viburnum lentago</i>	M
Virburnum, Siebold	<i>Viburnum sieboldii</i>	M
Willow, goat	<i>Salix caprea</i>	M-H
Willow, laurel	<i>Salix pentandra</i>	M
Willow, purple	<i>Salix purpurea</i>	M-H
Willow, pussy	<i>Salix discolor</i>	H
Winterberry	<i>Ilex verticillata</i>	M
Yucca, Adam's needle	<i>Yucca filamentosa</i>	H
Yucca, golden sword	<i>Yucca filifera</i>	H
Evergreen Trees and Shrubs		
Arborvitae	<i>Thuja occidentalis</i>	L-H
Camellia	<i>Camellia japonica</i>	L
Fir, balsam	<i>Abies balsamea</i>	L-M
Fir, white	<i>Abies concolor</i>	M-H
Fir, Douglas	<i>Pseudotsuga menziesii</i>	L-M
Firethorn, scarlet	<i>Pyracantha coccinea</i>	L-M
Gardenia	<i>Gardenia augusta</i>	S
Golden Marguerite	<i>Euryops pectinatus</i>	L
Hemlock, Canadian	<i>Tsuga canadensis</i>	L
Hibiscus, Chinese	<i>Hibiscus rosa-sinensis</i>	L
Juniper, Chinese	<i>Juniperus chinensis</i>	M
Juniper, common	<i>Juniperus communis</i>	H
Juniper, creeping	<i>Juniperus horizontalis</i>	H
Juniper, eastern	<i>Juniperus virginiana</i>	H
Juniper, Pfitzer	<i>Juniperus X pfitzeriana</i>	H
Juniper, Rocky Mountain	<i>Juniper scopulorum</i>	H
Pine, Bosnian	<i>Pinus leucodrmis</i>	H
Pine, European black	<i>Pinus nigra</i>	M-H
Pine, eastern white	<i>Pinus strobus</i>	L
Pine, jack	<i>Pinus bankisana</i>	H
Pine, Japanese black	<i>Pinus thunbergiana</i>	H
Pine, Japanese white	<i>Pinus parviflora</i>	H
Pine, Mugho	<i>Pinus mugo</i>	H
Pine, ponderosa	<i>Pinus ponderosa</i>	M-H
Pine, red	<i>Pinus resinosa</i>	L
Pine, Scots	<i>Pinus sylvestris</i>	L-H
Pine, Swiss stone	<i>Oinus cembra</i>	L
Red-cedar, eastern	<i>Juniperus virginiana</i>	M-H
Redwood, dawn	<i>Metasequoia glyptostroboides</i>	L
Sea-buckthorn	<i>Hippophae rhamnoides</i>	M-H
Spruce, blue	<i>Picea pungens</i>	L-H
Spruce, Norway	<i>Picea abies</i>	L-M
Spruce, white	<i>Picea glauca^d</i>	L-H
Wintercreeper, purpleleaf	<i>Euonymus fortunei</i>	H
Yew, English	<i>Taxus baccata</i>	L
Yew, Japanese	<i>Taxus cuspidata</i>	L-H
Grasses		
Bluegrass, Kentucky	<i>Poa pratensis</i>	L
Bluestem, little	<i>Schizachyrium scoparium</i>	M
Feather reed grass	<i>Calamagrostis X acutiflora</i>	H

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Grasses (continued)		
Fescue, Elijah Blue	<i>Festuca glauca</i>	M
Fescue, red	<i>Festuca rubra</i>	M
Fescue, tall (Kentucky 31)	<i>Festuca arundinacea</i>	H
Fountain grass	<i>Pennisetum alopecuroides</i>	H
Lyme grass, blue	<i>Leymus arenarius</i>	H
Maiden grass	<i>Miscanthus</i> spp.	M
Oats, northern sea	<i>Chasmantium latifolium</i>	H
Oat grass, blue	<i>Helictotrichon sempervirens</i>	M
Switch grass	<i>Panicum virgatum</i>	H
Turf lily, giant	<i>Ophiopogon jaburan</i>	M
Forbs		
Ageratum	<i>Ageratum houstonianum</i>	M
Alyssum, sweet	<i>Lobularia maritima</i>	M
Amaranth, globe	<i>Gomphrena globosa</i>	M
Amaryllis	<i>Hippeastrum hybridum</i>	L
Anthemis	<i>Anthemis punctata</i>	H
Anthurium	<i>Anthurium andreanum</i>	L
Artemisia, dwarf silvermound	<i>Artemisia schmidtiana</i>	M
Aster, China	<i>Callistephus chinensis</i>	M
Aster, purple dome	<i>Aster navae-angliae</i>	M
Aster, seaside	<i>Erigeron gaucus</i>	H
Baby's-breath	<i>Gypsophila paniculata</i>	M
Baby's-breath	<i>Gypsophila vaniculata</i>	M
Beardtongue	<i>Penstemon</i> spp.	M
Begonia	<i>Begonia bunchii</i>	L
Begonia	<i>Begonia riciniifolia</i>	L
Begonia, Rex	<i>Begonia Rex-cultorum</i>	S
Bergenia, heart-leaf	<i>Bergenia cordifolia</i>	M
Bouvardia	<i>Vouvardia longiflora</i>	M
Cactus, apple	<i>Cereus peruviana</i>	M
Carnation	<i>Dianthus caryophyllus</i>	M
Catmint	<i>Nepeta X faassenii</i>	M
Celosia, chief	<i>Celosia argental cristata</i>	H
Cinquefoil, Jackman Shrubby	<i>Potentilla fruticosa</i>	H
Clematis	<i>Clematis orientalis</i>	H
Coleus	<i>Coleus blumei</i>	H
Coral bells, chatterbox	<i>Heuchera sanguinea</i>	M
Coral bells, purple palace	<i>Heuchera micrantha</i>	M
Cosmos	<i>Cosmos bipinnatus</i>	L
Coxcomb, crested	<i>Celosia argenta cristata</i>	M
Creeping lilyturf	<i>Liriope spicata</i>	M
Cucumber leaf	<i>Helianthus debilis</i>	H
Cupid's dart	<i>Catananche caerulea</i>	M
Cyclamen, Persian	<i>Cyclamen persicum</i>	L
Daisy, Becky shasta	<i>Leucanthemum X superbum</i>	M
Daisy, gerbera	<i>Gerbera jamesonii</i>	M
Daylily	<i>Hemerocallis</i> spp.	M
Dusty miller	<i>Artemisia stelleran</i>	M
Evergreen candytuft	<i>Iberis sempervirens</i>	M
Felicia, blue	<i>Felicia amelloides</i>	L
Gazania	<i>Gazania aurantiacum</i>	M
Gentian, prairie	<i>Eustoma grandiflorum</i>	M
Geranium	<i>Pelargonium X horticum</i>	L
Geranium	<i>Pelargonium domesticum</i>	H
Geranium, ivy	<i>Pelargonium peltatum</i>	M

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Forbs (continued)		
Gladiola	<i>Gladiolus</i> spp.	L
Goblin blanket flower	<i>Gaillardia X grandiflora</i>	M
Hen and chicks	<i>Sempervivum</i> spp.	M
Holly, sea	<i>Eryngium X oliverianum</i>	H
Holly, sea	<i>Eryngium X tripartitum</i>	H
Hosta, fragrant	<i>Hosta plantaginea</i>	M
Hosta, variegated	<i>Hosta undulata</i>	M
Impatiens	<i>Impatiens X hawkeri</i>	L
Iris, bearded	<i>Iris</i> spp.	M
Iris, Siberian	<i>Iris sibirica</i>	M
Ivy, English	<i>Hedera helix</i>	H
Jade plant	<i>Crassula ovata</i>	M
Kalanchoe	<i>Kalanchoe</i> spp.	M
Larkspur	<i>Consolida ambigua</i>	L
Lavender, purple sea	<i>Limonium latifolium</i>	M-H
Lily	<i>Lilium</i> spp.	L
Lily of the Nile	<i>Agapanthus orientalis</i>	L
Lily, spider	<i>Hymenocallis keyensis</i>	M
Love-lies-bleeding	<i>Amaranthus tricolor</i>	H
Mallow, prairie	<i>Sidalcea malviflora</i>	M
Marigold, Aztec	<i>Tagetes erecta</i>	M
Marigold, French	<i>Tagetes patula</i>	M
Marigold, pot	<i>Calendula officinalis</i>	M
Mum	<i>Chrysanthemum morifolium</i>	M
Myrtle	<i>Vinca minor</i>	L
Narcissus, paperwhite	<i>Narcissus tazetta</i>	L
Nasturtium	<i>Tropaeolum majus</i>	M
Obedient plant	<i>Thysostegia virginiana</i>	M
Onion, ornamental	<i>Allium senescens</i>	H
Pansy	<i>Viola X wittrockiana</i>	L
Periwinkle, blue	<i>Vinca major</i>	M
Petunia	<i>Petunia hybrida</i>	H
Phlox, creeping	<i>Phlox subulata</i>	M
Pink, cheddar	<i>Dianthus gratianopolitanus</i>	M
Pink, Helen allwood	<i>Dianthus X allwoodii</i>	H
Pink, rainbow	<i>Dianthus chinensis</i>	M
Poinsettia	<i>Euphorbia pulcherrima</i>	L
Poppy, California	<i>Eschscholzia californica</i>	M
Primrose, Mexican evening	<i>Oenothera speciosa</i>	M
Primrose, silver evening	<i>Oenothera macrocarpa</i>	M
Pygmy torch	<i>Amaranthus hypochondiracus</i>	H
Rock soapwort	<i>Saponaria ocymoides</i>	M
Rose, moss	<i>Portulaca grandiflora</i>	H
Safflower	<i>Carthamus tinctorius</i>	M
Sea kale	<i>Crambe maritima</i>	H
Snapdragon	<i>Antirrhinum majus</i>	H
Speedwell, woolly	<i>Veronica incana</i>	H
Splendens sea thrift	<i>Armeria maritima</i>	M
Spurge, cushion	<i>Euphorbia polychroma</i>	M
Star flower, Arabian	<i>Ornithogalum arabicum</i>	L
Starfish flower	<i>Stapelia gigantea</i>	M
Stars of Persia	<i>Allium christophii</i>	H
Statice, German	<i>Goniolimon tataricum</i>	M
Statice, seafoam	<i>Limonium perezii</i>	L
Statice, wavyleaf	<i>Limonium sinuatum</i>	L

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Forbs (continued)		
Stock, hoary	<i>Matthiola incana</i>	H
Stonecrop	<i>Sedum</i> spp.	M
Strawberry, barren	<i>Waldsteinia ternata</i>	M
Sundrops	<i>Oenothera fruticosa</i>	M
Sunflower	<i>Helianthus annuus</i>	M
Sweet pea	<i>Lathyrus japonica</i>	M
Sweet William	<i>Dianthus barbatus</i>	M
Thistle, globe	<i>Echinops</i> spp.	H
Throatwort, blue	<i>Trachelium caeruleum</i>	L
Thyme	<i>Thymus</i> spp.	M
Tickseed, large-flowered	<i>Coreopsis grandiflora</i>	M
Treasure flower	<i>Gazania</i> spp.	H
Valerian, red	<i>Centranthus ruber</i>	M
Vinva	<i>Catharanthus roseus</i>	L
Virginia creeper	<i>Parthenocissus quinquefolia</i>	H
Wormwood, beach	<i>Artemisia stelleriana</i>	M
Yarrow, common	<i>Achillea millefolium</i>	M
Zinnia	<i>Zinnia elegans</i>	M
Herbaceous Crops – Fibers, Grain, and Special Crops		
Artichoke, Jerusalem	<i>Helianthus tuberosus</i>	M
Barley	<i>Hordeum vulgare</i>	H
Canola or rapeseed	<i>Brassica campestris</i>	H
Canola or rapeseed	<i>Brassica napa</i>	M
Chickpea	<i>Cicer arietinum</i>	M
Corn	<i>Zea mays</i>	M
Cotton	<i>Gossypium hirsutum</i>	H
Crambe	<i>Crambe abyssinica</i>	M
Flax	<i>Linum usitatissimum</i>	M
Guar	<i>Cyamopsis tetragonoloba</i>	H
Kenaf	<i>Hibiscus cannabinus</i>	H
Lesquerella	<i>Lesquerella fenderli</i>	M
Oats	<i>Avena sativa</i>	H
Peanut	<i>Arachis hypogaea</i>	M
Rice, paddy	<i>Oryza sativa</i>	L
Roselle	<i>Hibiscus sabdariffa</i>	M
Rye	<i>Secale cereale</i>	H
Safflower	<i>Carthamus tinctorius</i>	M
Sesame	<i>Sesamum indicum</i>	L
Sorghum	<i>Sorghum bicolor</i>	M
Soybean	<i>Glycine max</i>	M
Sugarbeet	<i>Beta vulgaris</i>	H
Sugarcane	<i>Saccharum officinarum</i>	M
Sunflower	<i>Helianthus annus</i>	M
Triticale	<i>X Tritiosecale</i>	H
Wheat	<i>Triticum aestivum</i>	M
Wheat, durum	<i>Triticum turgidum, var durum</i>	H
Herbaceous Crops – Grasses and Forage Crops		
Alfalfa	<i>Medicago sativa</i>	M
Alkaligrass	<i>Puccinellia airoides</i>	H
Alkali sacaton	<i>Sporobolus airoides</i>	H
Barley (forage)	<i>Hordeum vulgare</i>	M
Bentgrass, creeping	<i>Argostis stolonifera</i>	M
Bermudagrass	<i>Cynodon dactylon</i>	H
Bluestem, Angleton	<i>Dichanthium aristatum</i>	M

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Herbaceous Crops – Grasses and Forage Crops (continued)		
Broadbean	<i>Vicia faba</i>	M
Brome, mountain	<i>Bromus marginatus</i>	M
Brome, smooth	<i>Bromus inermis</i>	M
Bufflegrass	<i>Pennisetum ciliare</i>	M
Burnet	<i>Poterium sanguisorba</i>	M
Canarygrass, reed	<i>Phalaris arundinacea</i>	M
Clover, alsike	<i>Trifolium hybridum</i>	M
Clover, Berseem	<i>Trifolium alexandrinum</i>	M
Clover, Hubam	<i>Melilotus alba</i>	M
Clover, ladino	<i>Trifolium repens</i>	M
Clover, Persian	<i>Trifolium resupinatum</i>	M
Clover, red	<i>Trifolium pratense</i>	M
Clover, strawberry	<i>Trifolium fragiferum</i>	M
Clover, sweet	<i>Melilotus</i> sp.	M
Clover, white Dutch	<i>Trifolium repens</i>	M
Corn (forage)	<i>Zea Mays</i>	M
Cowpea (forage)	<i>Vigna unguiculata</i>	M
Dalligrass	<i>Paspalum dilatatum</i>	M
Dhaincha	<i>Sesbania bispinosa</i>	M
Fescue, tall	<i>Festuca elatior</i>	M
Fescue, meadow	<i>Festuca pratensis</i>	M
Foxtail, meadow	<i>Alopecurus pratensis</i>	M
Glycine	<i>Neonotonia wightii</i>	M
Gram, black	<i>Vigna mungo</i>	L
Gram, blue	<i>Bouteloua gracilis</i>	M
Guinea grass	<i>Panicum maximum</i>	M
Hardinggrass	<i>Phalaris tuberosa</i>	M
Kallargrass	<i>Leptochloa fusca</i>	H
Kikuyugrass	<i>Pennisetum clandestinum</i>	H
Lablab bean	<i>Lablab purpureus</i>	M
Lovegrass	<i>Eragrostis</i> sp.	M
Milkvetch, Cicer	<i>Astragalus cicer</i>	M
Millet, foxtail	<i>Setaria italica</i>	M
Oatgrass, tall	<i>Arrhenatherum elatius</i>	M
Oats (forage)	<i>Avena sativa</i>	H
Orchardgrass	<i>Dactylis glomerata</i>	M
Panicum, blue	<i>Panicum antidotale</i>	M
Pea, pigeon	<i>Cajanus cajan</i>	L
Rape (forage)	<i>Brassica napus</i>	M
Rescuegrass	<i>Chloris Gayana</i>	M
Rye (forage)	<i>Secale cereale</i>	H
Ryegrass, Italian	<i>Lolium multiflorum</i>	M
Ryegrass, perennial	<i>Lolium perenne</i>	M
Ryegrass, Wimmera	<i>Lolium, rigidum</i>	M
Saltgrass, desert	<i>Distichlis spicata</i>	H
Sesbania	<i>Sesbania exaltata</i>	M
Sirato	<i>Macroptilium atropurpureum</i>	M
Sphaerophysa	<i>Sphaerophysa salsula</i>	M
Sudangrass	<i>Sorghum sudanese</i>	M
Timothy	<i>Phleum pratense</i>	M
Trefoil, big	<i>Lotus pedunculatus</i>	M
Trefoili, narrowleaf	<i>Lotus corniculatus var tenuifloium</i>	M
Trefoili, broadleaf	<i>Lotus corniculatus var arvenis</i>	M
Vetch, common	<i>Vicia angustifolia</i>	M
Wheat (forage)	<i>Triticum angustifolia</i>	M

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Herbaceous Crops – Grasses and Forage Crops (continued)		
Wheat, durum (forage)	<i>Triticum turgidum</i> , var <i>durum</i>	M
Wheatgrass, standard	<i>Agropyron sibiricum</i>	M
Wheatgrass, fairway	<i>Agropyron cristatum</i>	H
Wheatgrass, intermediate	<i>Agropyron intermedium</i>	M
Wheatgrass, slender	<i>Agropyron trachycaulum</i>	M
Wheatgrass, tall	<i>Agropyron elongatum</i>	H
Wheatgrass, western	<i>Agropyron smithii</i>	M
Wildrye, Altai	<i>Elymus angustus</i>	H
Wildrye, beardless	<i>Elymus triticoides</i>	M
Wildrye, Canadian	<i>Elymus canadensis</i>	M
Wildrye, Russian	<i>Elymus junceus</i>	H
Herbaceous Crops – Vegetable and Fruit Crops		
Artichoke	<i>Cynara scolymus</i>	M
Asparagus	<i>Asparagus officinalis</i>	H
Bean, common	<i>Phaseolus vulgaris</i>	L
Bean, lima	<i>Phaseolus lunatus</i>	M
Bean, mung	<i>Vigna radiata</i>	L
Beet, red	<i>Beta vulgaris</i>	M
Broccoli	<i>Brassica oleracea</i>	M
Brussel sprouts	<i>Brassica oleracea</i>	M
Cabbage	<i>Brassica oleracea</i>	M
Carrot	<i>Daucus carota</i>	L
Cassava	<i>Manihot</i>	M
Cauliflower	<i>Brassica oleracea</i>	M
Celery	<i>Apium graveolens</i> var <i>dulce</i>	M
Corn, sweet	<i>Zea mays</i>	M
Cowpea	<i>Vigna unguiculata</i>	M
Cucumber	<i>Cucumis sativus</i>	M
Eggplant	<i>Solanum melongena</i> var <i>esculentum</i>	M
Fennel	<i>Foeniculum vulgare</i>	L
Garlic	<i>Allium sativum</i>	M
Gram, black	<i>Vigna mungo</i>	L
Kale	<i>Brassica oleracea</i>	M
Kohlrabi	<i>Brassica oleracea</i>	M
Lettuce	<i>Lactuca sativa</i>	M
Muskmelon	<i>Cucumis melo</i>	M
Okra	<i>Abelmoschus esculentus</i>	M
Onion, bulb	<i>Allium cepa</i>	L
Onion, seed	<i>Allium cent</i>	M
Parsnip	<i>Pastinaca sativa</i>	L
Pea	<i>Pisum sativum</i>	M
Pepper	<i>Capsicum annuum</i>	M
Pigeon pea	<i>Cajanus cajan</i>	L
Potato	<i>Solanum tuberosum</i>	M
Pumpkin	<i>Cucurbita pepo</i> var <i>pepo</i>	M
Purslane	<i>Portulaca oleracea</i>	M
Radish	<i>Raphanus sativus</i>	M
Spinach	<i>Spinacia oleracea</i>	M
Squash, scallop	<i>Cucurbita pepo</i> var <i>meloepo</i>	M
Squash, zucchini	<i>Cucurbita pepo</i> var <i>meloepo</i>	M
Strawberry	<i>Fragaria X Ananassa</i>	L
Sweet potato	<i>Ipomoea batatas</i>	M
Swiss chard	<i>Beta vulgaris</i>	H
Tepary bean	<i>Phaseolus acutifolius</i>	M
Tomato	<i>Lycopersicon lycopersicum</i>	M

Table continued on next page.

Table C.1 (Continued)

Common Name	Scientific Name	Tolerance
Herbaceous Crops – Vegetable and Fruit Crops (continued)		
Turnip	<i>Brassica rapa</i>	M
Watermelon	<i>Citrullus lanatus</i>	M
Winged bean	<i>Psophocarpus tetragonolobus</i>	M
Woody Crops		
Almond	<i>Prunus dulcis</i>	L
Apple	<i>Malus sylvestris</i>	L
Apricot	<i>Prunus armeniaca</i>	L
Avocado	<i>Persea americana</i>	L
Banana	<i>Musa acuminata</i>	L
Blackberry	<i>Rubus macropetalus</i>	L
Boysenberry	<i>Rubus ursinus</i>	L
Castorbean	<i>Ricinus communis</i>	M
Cherimova	<i>Annona cherimola</i>	L
Cherry, sweet	<i>Prunus avium</i>	L
Cherry, sand	<i>Prunus besseyi</i>	L
Coconut	<i>Cocos nucifera</i>	M
Currant	<i>Ribes</i> sp.	L
Date palm	<i>Phoenix dactylifera</i>	H
Fig	<i>Ficus carica</i>	M
Gooseberry	<i>Ribes</i> sp.	L
Grape	<i>Vitis vinifera</i>	M
Grapefruit	<i>Citrus X paradisi</i>	L
Guava	<i>Psidium guajava</i>	H
Guayle	<i>Parthenium argentatum</i>	H
Jambolan plum	<i>Syzygium cumini</i>	M
Jojoba	<i>Simmondsia chinensis</i>	H
Jujube, Indian	<i>Ziziphus mauritiana</i>	M
Lemon	<i>Citrus limon</i>	L
Lime	<i>Citrus aurantiifolia</i>	L
Loquat	<i>Eriobotrya japonica</i>	L
Macadamia	<i>Macadamia integrifolia</i>	M
Mandarin orange	<i>Citrus reticulata</i>	L
Mango	<i>Mangifera indica</i>	L
Natal plum	<i>Carissa grandiflora</i>	H
Olive	<i>Olea europaea</i>	M
Orange	<i>Citrus sinensis</i>	L
Papaya	<i>Carica papaya</i>	M
Passion fruit	<i>Passiflora edulis</i>	L
Peach	<i>Prunus persica</i>	L
Pear	<i>Pyrus communis</i>	L
Pecan	<i>Carya illinoensis</i>	M
Persimmon	<i>Diospyros virginiana</i>	L
Pineapple	<i>Ananas cosmosus</i>	M
Pistachio	<i>Pistacia vera</i>	M
Plum	<i>Prunus domestica</i>	M
Pomegranate	<i>Punica granatum</i>	M
Popinac, white	<i>Leucaena leucocephala</i>	M
Pummelo	<i>Citrus maxima</i>	L
Raspberry	<i>Rubus idaeus</i>	L
Rose apple	<i>Syzygium jambos</i>	L
Sapote, white	<i>Casimiroa edulis</i>	L
Scarlet wisteria	<i>Sesbania grandiflora</i>	M
Tamarugo	<i>Prosopis tamarugo</i>	H
Walnut	<i>Juglans</i> spp.	L

Table continued on next page.

Table C.1 (Continued)

Note: H indicates high tolerance, M indicates moderate tolerance, L indicates low tolerance.

^a *This species has been reclassified as Aesculus flava.*

^b *Winter King cultivar.*

^c *This species has been reclassified as Acer saccharum ssp. nigrum.*

^d *This species has been reclassified as Picea laxa.*

^e *This species has been reclassified as Styphnolobium japonicum.*

Source: R.E. Hanes, Effects of De-Icing Salts on Water Quality and Biota, *Transportation Research Board*, 1976; P.D. Kelsey and R.G. Hootman, "Deicing Salt Dispersion and Effects on Vegetation Along Highways—Case Study: Deicing Salt Deposition on the Morton Arboretum," Chapter 8 in F.M. D'Itri (editor), *Chemical Deicers and the Environment*, Lewis Publishers, 1992; J. Beckerman and B.R. Lerner, Salt Damage in Landscape Plants, *Purdue University Extension publication ID-412-W*, 2009; L.G. Jull, Winter Salt Injury and Salt-Tolerant Landscape Plants, *University of Wisconsin-Extension Publication No. A3877*, 2009; C.M. Grieve, S.R. Grattan, and E.V. Maas, "Plant Salt Tolerance," Chapter 13, pp. 405-459, in: W.W. Wallender and K.K. Tanji (editors), *Agricultural Salinity Tolerance and Management*, ASCE, 2012