

TREE AND SHRUB TOLERANCE TO DE-ICING SALT SPRAY

Over the past 10 to 15 years, trees and shrubs along major highways in Michigan and other northern states have shown desiccation injuries. The damage varies with variety - those plants with sticky, pubescent, or sunken buds appear to be somewhat more tolerant than those plants with smooth, exposed buds. Tolerance to desiccation can be attributed to a number of things -- for example, the tolerant evergreens may be protected from injury due to a thick coating of wax on their needles. It is much more difficult to characterize the tolerance nature of deciduous species, as various deciduous species exhibit a malformation of growth like a witch's broom when injured.

The cause of this injury is the salt spray that splashes or drifts onto roadside trees following highway de-icing operations. Damage is most prominent in urban areas and seems to be linked to more frequent salt applications and to traffic density. The symptoms are most pronounced on sensitive plants close to the highway, but have been observed some 250 feet down wind of the traffic.

Sensitive plants may exhibit injury to a height of 20 to 25 feet, although lower branches protected by snow may escape injury. Depending upon the snow cover, a zone of injury may extend from three to eight feet above the ground to a height of 20 to 25 feet.

Following is a summary of the average salt spray tolerances of various plants bordering selected Michigan highways.

Botanical Name (Common Name) Tolerance

Acer campestre (Hedge maple) Moderately tolerant
Acer ginnala (Amur maple) Moderately tolerant
Acer platanoides (Norway maple) Tolerant
Acer rubrum (Red maple) Moderately tolerant
Acer saccharinum (Silver maple) Tolerant
Acer saccharum nigrum Moderately tolerant

(Black maple)
Aesculus glabra (Ohio buckeye) Very tolerant
Amelanchier canadensis Tolerant
(Juneberry)
Cercis canadensis (Redbud) Sensitive
Cornus racemosa (Gray dogwood) Sensitive
Cornus stolonifera Sensitive
(Rodosier dogwood)
Crataegus crusgalli Moderately tolerant
(Cockspur hawthorn)
Crataegus monogyna Moderately tolerant
(Singleseed hawthorn)
Crataegus oxyacantha Sensitive
(English hawthorn)
Elaeagnus angustifolia
(Russian olive) Tolerant
Euonymus alata (Winged) Very tolerant
Euonymus europaeus Sensitive
(European euonymus)
Fraxinus pennsylvanica
lanceolata (Green ash) Tolerant
Gleditsia triacanthos Tolerant
(common honey locust)
Hamamelis virginiana Moderately tolerant
(common witch-hazel)
Ilex verticillata Tolerant
(Michigan holly)
Juniperus spp. (Juniper) Moderately tolerant
Larix laricina (Tamarack) Tolerant
Ligustrum spp. (Privet) Moderately tolerant
Liriodendron tulipifera Sensitive
(Tuliptree)
Malus spp. (Crabapple) Sensitive
Morus rubra (Red mulberry) Tolerant
Nyssa sylvatica (Black gum) Moderately tolerant
Picea abies (Norway spruce) Moderately tolerant
Picea glauca (White spruce) Sensitive
Picea mariana (Black spruce) Sensitive
Picea pungens (Colorado spruce) Very tolerant
Pinus banksiana (Jack pine) Moderately tolerant
Pinus nigra (Austrian pine) Very tolerant
Pinus resinosa (Red pine) Sensitive
Pinus strobus (E. white pine) Very sensitive
Pinus sylvestris (Scotch pine) Sensitive
Platanus occidentalis Sensitive
(American sycamore)
Populus deltoides (Cottonwood) Very tolerant
Prunus americana (American plum) Sensitive
Pseudotsuga taxifolia Tolerant

(Douglas fir)
Quercus alba (White oak) Sensitive
Quercus bicolor (Swamp wht. oak) Sensitive
Quercus imbricaria (Shingle oak) Moderately tolerant
Quercus palustris (Pin oak) Sensitive
Quercus prinus (Chestnut oak) Sensitive
Quercus robur (English oak) Sensitive
Quercus rubra (Red oak) Sensitive
Quercus velutina (Yellow oak) Sensitive
Rhamnus spp. (Buckthorn) Tolerant
Rhodotypos scandens Very tolerant
(Black jetbead)
Rhus glabra (Smooth sumac) Tolerant
Rhus typhina (Staghorn sumac) Tolerant
Salix spp. (Willow) Moderately tolerant
Sassafras varifolium Sensitive
(Silky sassafras)
Spiraea vanhouttei Tolerant
(Van houtte spirea)
Taxus spp. (Yew) Tolerant
Thuja occidentalis Sensitive
(American arborvitae)
Ulmus pumila (Siberian elm) Tolerant
Viburnum americanum Tolerant
(American cranberry bush)
Viburnum dentatum (Arrow wood) Moderately tolerant
Viburnum lentago (Nannyberry) Moderately tolerant

SOURCE:

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