Leaflets News and Information for the Arborists of Michigan

The Plant Doctor's LANDSCAPE TIPS

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WINTER INJURY ON LANDSCAPE PLANTS

INTRODUCTION:

Winter injury on plants occurs in Michigan every year. Generally, winter injury results from adverse weather conditions. Several factors may contribute to winter injury. Winter injury is often attributed to extreme temperatures; these very cold temperatures often sink to below zero degrees Fahrenheit for at least several days. Wind chill contributes to plant injury as well by exacerbating low temperatures or by desiccation. Another factor is the sudden change in temperatures. For example, consider that temperatures in the fall sometimes drop from the 60's or 70's to below freezing in a matter of hours when a cold front moves through a region. Also, several days of Indian summer may cause bud swell and subsequent freezing in January, February or March.

SYMPTOMS OF WINTER INJURY:

Any and all plant tissues may be affected by winter injury. Heavy snow and ice loads can lead to outright breakage or internal bending injury to plants (Photo 1). Winter Injury may also occur from desiccation after cold blustery winds dry out plant tissue (Photo 2). In many cases, symptoms of winter injury are not noticed until the following spring or summer. Probably the most common symptom of winter injury is plant death (Photo 3). Outright death is most common on plants that have marginal winter hardiness for Michigan or the area where they have been installed; native plants tend to be more tolerant to winter injury. In other cases, the lack of insulating snow during extremely cold temperatures may predispose turf, herbaceous and woody landscape plants to winter injury.

Buds affected by winter injury often will not expand; hence, leaf production will be inhibited the following spring (Photo 4). When primary buds are killed, secondary buds may eventually expand to save the viability of the plant. Stem tissues include the cambial tissues, which may be injured or killed by extreme temperatures (Photos 5 & 6); in such cases, buds may swell in the spring, and leaves may expand and depending on degree of injury, foliage may suddenly wilt shortly after expansion or later in the summer when drought and heat conditions will not permit the cambial tissues to keep up with transpiration needs of the foliage. Roots may also be affected by winter injury. Grafted plants with marginal cold weather hardiness root stocks are very susceptible. When roots are killed by winter injury, foliage may not emerge the following spring or may emerge slowly, appear stunted and eventually wilt.

MANAGEMENT OF WINTER INJURY:

Possibly the most important criterion to avoid winter injury is to install plants with appropriate winter hardiness in proper places. For example, some rhododendrons are very susceptible to winter injury and should either be avoided in Michigan landscapes or planted in sites that are more protected from the "elements." Some shrubs may be protected by installation of weather barriers such as burlap. Mulch may insulate and hence protect roots and root collar/stem regions from extremes in cold temperature. Avoid fertility programs and irrigation practices that may stimulate lush growth in the fall when plants should be acclimating for winter conditions. One of the most important steps to manage winter injury after the fact is to be patient. Trees, shrubs and herbaceous plants which appear dead after the winter may fully recover with sufficient time (Photo 3). ■

Photo 1: Ice and snow loads may cause breakage or internal injury from bending.

Photo 2: These pines turned brown on one side after desiccation from winter winds. Note green foliage on lower branches, which received protection by snow.

Photo 3: These potted spruces from a nursery were presumed to be dead, killed by winter injury or a "winter disease." In reality, these trees were simply affected with "winter burn" (desiccation) and would fully recover with new growth in the spring.

Photo 4: These trees exhibited sparse foliage in the spring due to bud death. They recovered with secondary bud expansion.

Photo 5: Among other factors, winter injury may cause death to cambial tissues (xylem and phloem). Note dead tissues (brown) on left while normal, healthy and succulent green tissue is shown on right.

Photo 6: This sycamore trunk cracked with a loud bang when temperatures remained below zero degrees Fahrenheit for several days. The tree would fully recover with time.