



ATTS Group

Trees protection during winter drought

By Toso Bozic

Many parts of Alberta is under drought conditions since June of last year, severe droughts cause widespread tree mortality across landscape (urban, acreage, farm, county or province wide) with profound effects on the function of tree/forestry ecosystems and overall environment. As summer and fall drought continued into winter with no snow on ground to protect root system, tree roots will further suffer from winter drought and physical damages.

Cold winter damages can happen due to tree inability to survive cold weather, lack of snow in some part of Alberta, strong cold and dry wind, heavy snow and ice in late fall or early spring. As winter casts its dry cold and icy spell, trees face a unique set of challenges, especially in regions already experiencing drought.

Winter drought, characterized by a scarcity/lack of water insulation and snow protection to roots during the colder months, poses a threat to the well-being of trees. Despite the leafless appearance and apparent dormancy, trees are engaged in a complex dance of survival during this period. Roots remain mostly inactive but can and do function and grow during winter months whenever soil temperatures are favorable, even if the air aboveground is brutally cold.

Unlike the more conspicuous summer drought, winter drought often goes unnoticed, as the ground may appear frozen and devoid of visible signs of moisture scarcity. However, trees and their roots continue to lose water through transpiration, albeit at a slower rate compared to the growing season.

It's important to note that **newly planted trees are at a higher risk** of sustaining injuries from the winter cold compared to mature trees. Additionally, coniferous trees, during the winter months, might lose water through their needles faster than their roots can absorb, resulting in brown needles during the spring—an occurrence known as winter browning in coniferous trees.

Trees and Root Health and Preservation

Root injuries resulting from cold conditions pose a significant threat to the vitality of trees and shrubs. In contrast to branches, buds, or trunks, roots do not enter dormancy simultaneously. Research indicates that roots continue their functions and growth during winter, especially when soil temperatures remain favorable. However, the physical effects of freezing, heaving, and soil cracking during winter can cause substantial harm to roots, particularly the delicate feeder roots in the upper layers of organic material. Preserving the roots is of paramount importance:

- **Mulching:** As many parts of Alberta are experiencing no or very little snow, putting mulch now (Jan-March) still can be beneficial to protection of tree roots. Mulching is a fundamental practice to shield roots. Mulching is a simple yet effective strategy to protect trees during winter drought. A layer of organic mulch around the base of the tree



ATTS Group

helps retain soil moisture, insulate roots from extreme temperatures, and suppress weed growth that competes for water. Applying 4-6 inches (10 -15 cm) of arborist wood chips mulch will greatly reduce loss of moisture in the soil. Establishing a donut-shaped wood chip cover around your tree is a simple yet efficient approach to conserve moisture and minimize soil frost heaving.

- **Snow Fences:** Snow fences are effective physical barriers that also double as windbreaks. Positioned strategically on the windward side of a tree or a grove, snow fences slow down the wind, reducing its intensity before reaching the trees. The snow accumulation around the fence provides additional insulation.
- **Hay and straw bales barriers:** In newly planted or young trees, establishing row of hay or straw bales (large or square) around trees, will protect trees from cold and strong winds.
- **Windbreak Walls:** Constructing windbreak walls involves erecting solid structures, such as wooden or plastic panels, to intercept and deflect cold winds away from trees. These walls are strategically placed to create a barrier that minimizes the wind's force.
- **Snowfall Advantages:** Snowfall is beneficial as it helps prevent the soil from freezing, even in severely cold air temperatures. Moreover, if snow arrives after the soil has already frozen, it acts as a protective layer, shielding the roots from temperature fluctuations during thawing periods in January or March.
- **Examine and Seal Cracks:** For recently planted trees or drought created cracks, inspect the soil for cracks resulting from the planting process or dry fall conditions. Sealing these cracks prevents cold air from infiltrating the soil by adding adequate mulching can also serve this purpose.
- **Avoid any pruning or other physical damages** – it is important not to damage trees and roots during this time. Avoid any driving around root zone.
- **Wildlife protection:** Use mesh wire (1/4 inch in size) to protect trunk bark from mice, rabbits, voles and to some extent deer and moose. Adding plastic guard around fruit trees will also protect bark of fruit trees from sunscald as well as from bark stripping from moose and deer
- **Avoid any salt damages** - Avoid or reduce the amount of salt used for de-icing around trees
- **Prepare trees for early spring** recovery by once weather conditions become favorable by adding watering, fertilizing, removal of dead branches,

Conclusion

In the face of persistent drought and winter's cold winds and lack of snow, implementing physical barriers stands, adding mulch, avoid using salt, are only proactive and effective strategies to protect trees.