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Preventing Winter Injury To Landscape Plants

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Winter injury to plants is a common problem throughout Nevada. Damaged plant parts dry out, die or become diseased; ultimately, the whole plant may die. Dry soils, dry winter winds, warm, sunny days and freezing nights without precipitation contribute to winter plant damage.

Plant Selection--People frequently attempt to grow semi-hardy, poorly adapted plants because of their desirable ornamental characteristics. Unfortunately, in order to maintain an acceptable appearance, avoid damage or just survive, these plants require expensive protective care. Avoid this trap. Consult your local Nevada Cooperative Extension agent for a list of winter-hardy ornamentals for your area.

Soil Modification--Hardpans and caliche layers impede water flow and root growth. Water from winter precipitation causes waterlogged soils and shallow rooted plants. Waterlogged roots rot and die. Likewise, root impenetrable layers create shallow rooted, poorly anchored plants subject to frequent drought stress. Before planting, break up hardpans and caliche layers by tilling 24 to 36 inches deep.

Soils in Nevada contain little organic matter. Consequently, many ornamentals grow poorly and are susceptible to winter injury. Before planting, mix liberal amounts of organic matter into light, sandy or heavy clay soils to promote the following:

- Water movement into soils. This reduces ponding, surface runoff and erosion. * Drainage in heavier soils. .
- Increased water holding capacity in sandy soils.
- Increased soil oxygen levels to greater depths in heavy soils.
- Greater soil nutritional levels (increased cation exchange capacity). * A larger population of beneficial soil microorganisms. * A lower soil pH, reducing soil alkalinity .
- Improved root growth into a larger, deeper volume of soil.

These factors improve plant growth during summer and reduce potential winter stress. Most types of organic matter provide these benefits when mixed into the soil. Avoid using fresh manure as it contains too many salts. Well-composted manures will not "burn" plants and have fewer weed seeds. Canadian peat moss and bark are excellent, but often expensive or not readily available.

Injury To Late Season Growth--New growth produced late in the fall will not survive freezing temperatures; however, season-old tissue is not as easily damaged by cold. Discourage late-season growth. Do not apply fertilizer to shrubs and trees within six weeks before the first expected fall frost. Do not prune late in the year except to remove dead or diseased parts. Reduce irrigation rates and frequency as days become shorter and cooler, but do not allow the soil to dry out.

Excess Loss Of Plant Moisture --Evergreen plants continue to lose moisture during the winter. Water loss is greatest during windy, sunny, mild weather. If the ground is frozen below the root zone, water is unavailable to plant roots. Consequently, internal plant water becomes inadequate to compensate for that lost from the plant. Leaves of broad-leafed evergreens curl inward and hang down when water loss exceeds uptake. Under severe conditions, leaves "burn" at their margins, turn brown and dry out. Well-adapted, narrow-leafed evergreens, such as yew, spruce and juniper, and many non-evergreen trees and shrubs, also suffer winter desiccation injury. Daily heating and freezing accompanied by wind and bright, sunny skies, damages exposed limbs and trunks, most commonly on their south and west sides. Sunburned and dehydrated bark splits, cracks and dies, especially if the plants have thin or young bark. Flower buds of many plants may abort over winter, eliminating spring flowering. Leaves, buds and twigs may desiccate. If water stress is prolonged, entire plants die.

When plants are transplanted, many small, moisture absorbing roots are lost during digging and handling. If planted too late in the fall, the soil is too cold for rapid root growth. Consequently, broad-leafed evergreens which are most susceptible to winter injury should be planted in spring or early fall. Fall planting is preferred for most plants. Transplant late in the season to avoid long, hot, dry days, but early enough that soil temperatures remain warm. This allows rapid growth of new roots. Do not plant if the ground is expected to freeze within six weeks. Applying 3 to 4 inches of mulch in a 3 to 4-foot circle around the plant retains soil moisture and warm soil temperatures longer, prolonging root growth. Plants with an established root system will grow best during the spring and summer compared to a spring transplant placed in cold, wet, spring soils. In areas where the fall is short and soils freeze quickly, plant in the spring.

During severe cold the ground may freeze below the root system, and eliminate the supply of available water. Shallow root systems often dry out and die when exposed to daily freezing and thawing during dry, cold weather. The insulation qualities of mulch will reduce soil drying and slow, deep freezing. Three to 4 inches of mulch will prolong the period before the penetration of frost stops root growth and water absorption. Give plants a deep soaking just before the ground freezes each fall and water whenever the ground thaws, but not more than once a month in winter. This is particularly important for evergreens.

Drought, low temperatures or prolonged flooding may damage or kill all or part of a root system. However, injury symptoms such as twig die back, bud abortion, leaf scorch, leaf drop, and stunted growth may not be evident until late spring, often after growth has resumed. Because only part of the root system may be damaged, the plant appears normal until higher temperatures, wind and longer days create a demand for moisture that the roots cannot supply. Although the plants show stress in spring, the damage occurred earlier.

Winter Wind and Sun Stress--When direct winter sun heats the leaves of evergreens, stomates open and water is lost. The temperature of bark and twigs exposed to direct sunlight exceeds air temperature. Daily freezing and thawing of plant parts causes cracking, drying and death. Reflected sunlight from light-colored buildings, fences, soils and snow may also stress plants in winter. Even hardy plants exposed for long periods to bright conditions are often damaged if soil moisture is unavailable.

Use mass plantings in the landscape to reduce water loss and locate plants, particularly broad-leafed evergreens, in the garden to avoid winter desiccation from wind, direct and reflected sunlight. Protect susceptible plants from sun and wind by planting them in protected, partly shaded or sheltered locations on the southeast, east, northeast or north sides of buildings, fences, walls' and plantings. Protect plants growing on the sunny south, southwest and west sides of buildings or slopes from winter sun, winds and reflected light.

Temporary windbreaks, plant covering and shade may be erected for the winter using lath snow fence, screening or burlap plant wraps. Wrap evergreens with burlap and pull the branches together to reduce water loss. Cover small plants with a slotted peach basket or clothes basket anchored to the ground. Use anti-desiccant or anti-transpirant sprays during the winter to prevent water loss from evergreen plants. Periodic applications may be required depending upon the amount of precipitation, wind, sun and the length of the winter season. These products are available at local nurseries. Use according to labeled directions.

Young deciduous trees take several years to produce sufficient canopy and twig mass to - shade their trunk from the sun. Removing much of the canopy of a large tree exposes limbs previously growing in the shade to full sun and causes them to sunburn. Exposure after the leaves fall intensifies the damage.

The trunks of young trees should be covered with a spiraled, light-colored plastic protector, wrapped with a 4-inch wide strip of burlap or painted with white latex to reflect the sun's rays. Paint or screen large, recently exposed limbs as well. This will prevent sunburning cracking and dehydrating.

Snow and Ice Damage --Snow and ice falling from roofs and removed from walks causes damage to landscape plants. The architecture of the plant affects how much damage occurs. Many upright evergreens are permanently separated or "opened-up" at the top of the plant and disfigured by snow. Spreading forms may only be temporarily bent down to the ground. However, splitting of the main trunk may occur in either case.

Remove excessive amounts of snow on upright or spreading evergreens by carefully sweeping it from the drooping boughs. Use a "soft" broom and always brush upwards toward the tips of the branches to avoid breaking or splitting.

Reduce or eliminate ice and snow damage by selectively pruning long, top-heavy , weak, or crossing branches before snow falls. Repair damaged trees and shrubs as soon as weather permits. Carefully remove broken branches, cutting back to the next larger branch or to the trunk.

Snow shoveling or plowing often damages plants. In designing the landscape, locate trees and shrubs far enough away from walks and drives to allow ample room for plowing. When drives and walks are plowed, avoid injury to nearby plants by installing guide stakes to show the operator the exact route. Do not throw snow onto plants where it can crush or break branches. Plant shrubs far enough away from a garage to avoid piling snow on them from the doorway and the drive. In choosing plants for use next to walks and driveways, select low spreading plants close to the ground to prevent damage.

"Salt," often mixed with sand, is used to melt snow and ice from pavements and provide traction. Salt stressed plants have "burnt", discolored leaves and are stunted, particularly if the roots are salt damaged. To prevent salt damage to trees and shrubs:

- Do not allow salt to come in contact with plants.
- Do not sweep salt-saturated snow or ice onto plants.
- Avoid applying salt to pavements near trees or shrubs, since the salt leached into the soil will injure roots.
- Use a low analysis fertilizer in place of rock salt.
- Use sand or coarse aggregate to prevent Slips and falls.

Frost Cracking --Long, vertical cracks can develop in the trunks of trees such as horsechestnut, linden, Norway maple, and London planetree (sycamore) that grew vigorously during the previous summer. Although these cracks may appear to close when warmer weather arrives, wood fibers may not knit together well and internal decay may occur . Unfortunately, little can be done to prevent or correct this problem.

Late Spring Freezing --Plants in Nevada are often damaged by late, spring frosts. Lush, new growth is particularly susceptible. Selecting plants that resume growth late in the spring can avoid spring frost damage. However, when frost is forecast, cover sensitive plants with tarps, sheet plastic, grocery bags, blankets, etc. Uncover plants as soon as possible after the sun has come up and the temperature is above freezing.

Repairing Winter-Damaged Plants --After an unusually severe winter, many plants may show substantial injury. Determine the extent of the winter injury and remove damaged branches with judicious pruning. If discoloration on narrow-leafed evergreen needles is not severe, they may regain their color or produce new foliage. Broad-leafed evergreens showing leaf damage will usually produce new leaves if branches and vegetative leaf buds were not injured. Damaged leaves may drop before leaves form.

People can make the difference in how much winter damage their trees and shrubs sustain. Nevada gardeners can prevent winter injury to their perennial plants. They should:

- Select and plant cold-hardy trees and shrubs adapted to inorganic, alkaline soils and a hot, dry climate.
- Break up caliche layers and hardpans prior to planting.
- Amend light and heavy soils with organic matter before planting- * Mulch around the base of plants.
- Locate plants to avoid freezing, drying, winter winds and direct sun. * Provide winter protection, if plants are exposed.
- Maintain plants in good vigor during the growing season.
- Replenish soil moisture before the ground freezes, but after the plants have gone dormant.
- Not excessively irrigate, prune or fertilizer late in the season. Let plants go dormant.
- Remove damaged and diseased plant parts immediately to prevent invasion by insects and diseases.

With proper planning, plant selection and care, plants will survive severe winter conditions to grow vigorously, be productive and provide a beautiful landscape for all to enjoy. Success is up to the gardener.