Bonsai Winter Care and Protection In Upstate New York

Dormancy

Day length is one of the most important factors in initiating dormancy. As the day length gets shorter, trees gradually begin to go into dormancy. Trees go through several stages of dormancy over many months in preparation for low winter temperatures. The leaves falling from the trees is only the beginning of the early dormancy stages. Root systems will continue to grow for some time before the tree reaches full dormancy.

Low temperatures induce dormancy to a lesser extent than the short day length, but it is important to the development of the later stages of dormancy. Success in over wintering bonsai requires that the tree must go through several stages of dormancy before it reaches its optimum winter hardiness range. If the tree misses these early stages before protection from very low temperatures early in autumn, it is not likely to survive the even lower later winter temperatures. Likewise, if temperatures drop quickly over a shorter period in the dormancy process, the tree will be under great stress and may not survive. Short period of low temperatures before protection will not cause damage, however, long periods of low temperatures will. Extreme changes in temperature (50° F day to 5°F night) may cause losses if it occurs in the earlier stages of dormancy. Trees survive only when they are gradually adapted to subzero weather.

Winter Hardiness Factors

It should be remembered that trees will only survive winter protection when exposed to temperatures within the tree's winter hardiness range. If the tree is exposed to temperatures below its winter hardiness range, it will rarely survive. The amount of protection during the winter months will be determined by the tree's winter hardiness. The more tender trees will need the most protection. A Maple for example may have a winter hardiness of 26° F, which means that it is not likely to survive if the temperature within the storage area falls to 10° F. In this case, it may be more desirable to change to a more appropriate storage condition of provide minimal heat to keep the temperature above 26° F.

There are two types of winter hardiness, one which affects the branches and the second which will affect the root system. This explains why branches may "die back" even though the tree may survive low temperatures. If the temperature falls below the root system winter hardiness range, there is little chance of survival. Frost should not be a concern for winter hardy plant material. Trees seem to possess varying abilities to survive frost. Only environmental or cultural conditions can modify a tree's tolerance to freezing, but these conditions cannot permanently alter frost tolerance. Only tender trees (indoor plant material) will need protection from frost.

Basic Care Before Protection

Continue a regular fertilizing program until mid-October to allow the tree to store energy for winter protection. If you haven't been fertilizing on a regular schedule throughout the season, don't start heavy feeding in autumn. Several days before placing the bonsai into winter protection, spray with an insecticide. The day before or after the bonsai are placed into winter protection areas, spray with a contact fungicide such as Captan. Do not use a systemic fungicide such an Benlate or Benomyl because the cold temperatures will reduce the translocation within the plant. To prevent disease problems, it is important to clean the containers moss and to remove any dead leaves or fruit still remaining on bonsai. Wire need not be removed from the bonsai before winter protection. Research by Dr. Louis D. Albright of Cornell University has shown that the trunk and branches will contract more than that of the wire at low temperatures. The trunk and branches also conduct cold at a different rate that that of wire. This means that wire will not cause harm to the bonsai during the winter. The last step is to water your bonsai well.

One important reminder is that a healthy bonsai can stand a greater chance of surviving winter than one which is not. Weak and unhealthy bonsai should be given maximum winter protection, or taken indoors if practical. If this is not possible or practical in your situations, the bonsai will require added protection during the winter. Normal protection given to healthy bonsai will not be sufficient for weak specimens. Newly transplanted bonsai (those transplanted in early autumn) will also need extra protection during the winter season. Remember, maintaining healthy and disease free bonsai during the growing season will greatly increase the survival rate.

Winter Protection

Bonsai must be protected during the winter months from very low temperatures, drying winter winds and high light levels. In the Upstate New York area bonsai are generally placed into winter protection in November, usually before Thanksgiving. However, this can vary accordingly from year to year depending on the current weather conditions. Bonsai are normally removed from Winter protection towards the end of March or early April the following spring.

The soil in bonsai containers can freeze without causing a problem, but the temperature should not be allowed to fall below the tree's winter hardiness range. Maintaining adequate light levels during the winter is not necessary when a bonsai is fully dormant. Bonsai can be protected in total darkness during the winter without causing any problems because trees do not require light during full dormancy. Ventilation and air circulation is helpful in preventing fungus diseases. Very high humidity in the protection area in conjunction with poor air circulation and the crowding of trees is sure to cause fungus mold to form. Bonsai should be checked from time to time during the winter for signs of fungus. If detected, spray with a fungicide when the temperature is above freezing.

Maintaining even temperatures in the winter protection area is very helpful to the survival of the bonsai. Providing low light levels will help temperature fluxuation. Extreme temperature changes can cause high losses in a number of ways. If high air temperatures are reached while the soil is still frozen, water loss through transpiration cannot be made up because the tree can’t draw water through the root system when the soil is frozen. High temperatures can also cause the bonsai to break out of dormancy too early, only to be damaged by low temperatures and low light levels before they can be placed outdoors in spring.

It is important to check the bonsai several times during the winter to see if they need watering. High temperatures will require more watering than low temperatures. Evergreens will transpire more readily than deciduous species in winter, therefore, they will need to be watered more often. Watering should be performed when the temperature is above freezing, and when the soil is not frozen. One successful trick is to place clean snow on the soil surface, but not against the trunk. As the temperature rises the melting snow will water the bonsai.

Over Wintering Facilities

Thee are a number of different over wintering structures and facilities that can be used for protecting bonsai. They type of structure selected will depend on the type of plant material and the number of bonsai in your collection. If you have just a few trees, an insulated wooden box (Styrofoam insulation on the inside walls of the box) would be appropriate.
After the box is filled with the bonsai, a mulch (sphagnum peat moss mixed with perlite or DRY leaves) can be placed over the trees for added protection. The box should be located in an accessible area so the bonsai can be checked for watering during winter. If mulched, the bonsai may not need watering at all during winter protection. The wooden box can be painted with a light color to reflect the sun’s heat, or it can be left natural. To maintain even temperatures within the box, cover it with snow. If low temperatures are maintained in this manner, the bonsai may not need watering until spring.

Bonsai can also be protected by burying the tree in the garden, bringing the soil level up to the lowest branches on the tree. This is especially helpful with larger specimens. If you use this technique, be sure to use a well drained section of the garden. Burlap or plastic should be staked around the bonsai (leave the top open) for protection from winter winds. Wrapping the bonsai container in old panty hose will help keep it clean when buried under the soil.

A heated or unheated garage is an excellent place to protect a modest bonsai collection during the winter. A heated garage is one that may be warmer than an unheated garage because on interior wall is heated from the warmth of the house. It would be ideal to place the bonsai along the heated side of the garage. An unheated (stand alone or unattached) garage will do as well. The bonsai should not be placed directly on the concrete floor. It would be better to place something such as wooden boards between the concrete floor and the bonsai container. Keep the garage door closed as much as possible during the winter especially on very cold and windy days. Don't leave the garage door open for long periods of time because it tends to cause a drying effect on the bonsai. The bonsai do not need light, so keep the door closed. If you must place the bonsai near or along the garage door, it would be a good idea to seal any drafts coming in around the door. Polyethylene sheeting can be used for this purpose. On nights when the temperatures are very low, the bonsai can be given added protection by covering with a polyethylene sheet. When temperatures rise, the plastic can be removed. A storage building, tool shed, unheated room, closed in porch or unheated attic can also be used for protecting bonsai during the winter.

A large bonsai collection requires a larger protection area. For those who have a lath house or some other shade structure, it is possible to cover it with polyethylene for winter. A temporary poly house can also be considered for protecting bonsai during the winter. Polyethylene sheeting should be white to reflect the sun and maintain even temperatures within the structure. Clear polyethylene can be used, but it must be painted with white latex paint. New polyethylene has a thin layer of oil on the surface. Wait until it is washed off by the rain to paint, it's much easier. Cut the paint in half with water and paint the plastic covered structure with a roller. **DO NOT** use black plastic! **DO NOT** use clear plastic! Both materials raise the temperature within the structure and will bring the bonsai out of dormancy too early. You may want to consider minimum heating for the structure on very cold nights. Use a camp stove, kerosene heater or quartz electric heater (if you have electricity in the structure). Heat rises, so place less winter hardy species on the higher shelves and the hardy species on the lower shelves. Added protection can be provided with a heater connected to a thermostat. The suggested range for this technique is best set between 28° F and 32°F.

Miniature bonsai and rock plantings will require a little added protection because of the small amount of soil protecting the root system. An insulated boy (Styrofoam lined on the inside) can be used when filled with perlite, or a mixture of sphagnum peat moss and perlite covering the bonsai. This material should be dry to provide the best insulation and to prevent mold or fungus. The bonsai covered in this manner will not require water until spring when they are removed from the box. Be sure to thoroughly water, soak and drain the bonsai before protecting for the winter. Any type of container can be substituted for a wooden box, large garbage cans, plastic bags or plastic boxes, as long as they can be filled with mulch. The wooden box or container should be kept in an unheated storage area. If a heated structure is used, it is not necessary to protect miniature bonsai and rock plantings using this technique. A final suggestion is to place traps or rodent poison in the winter protection area. Not to do so would be very foolish. Rodents will not only do great damage to your bonsai (pruning your most important branches) but may girdle the trunk causing sure death to the specimen. Mice have also been known to eat an entire evergreen as well as deciduous bonsai to the soil line. They just love Maples.

All of these techniques have been successfully used in the Upstate New York area to over winter bonsai. Hopefully, some of these ideas can be used for your own situation and help protect your bonsai for the long winter season. Successful winter storage will go a long way in protecting your bonsai, which represent many years of hard work and patience. A new growing season beginning in spring can provide another chance to improve and refine your bonsai, if they have been carefully over wintered and are found alive.

BONSAI
SOCIETY OF UPSTATE NEW YORK

Winter Protection For Species Commonly Traine For Bonsai In Upstate New York

General Winter Protection (Outdoors)

Scots Pine
Japanese Red Pine
Japanese Five-Needle Pine
Mugho Pine
Hedgehog Spruce
Dwarf Alberta Spruce
Bird Nest Spruce
Little Gen Spruce
Japanese Garden Juniper
Shimpaku Juniper
Blaauwi Juniper
Hinoki Cypress
Blue Moss Cypress
Arbovitae
Japanese Yew
Dawn Redwood
Canadian Hemlock
Bald Cypress
Hackberry
Forsythia
Amur Maple
Barberry
Japanese Hornbeam
Birch
Japanese Beech
Hawthorne
Dwarf Korean Lilac
American Larch
Japanese Larch
Porcelain Berry
Chinese Elm
Seiju Elm
Cork-Bark Chinese Elm
Ginkgo
Japanese Zelkova
Crabapple
Flowering Quince
Bittersweet
Wisteria

Maximum Winter Protection (Outdoors, perhaps some minimal heat)

Japanese Black Pine
Zuisho Japanese Five Needle Pine
Cryptomeria
Japanese Maple
Trident Maple
Cotoneaster
Japanese Holly
Stewartia
Chinese Quince
Flowering Apricot
Satsuki Azalea
Kurume Azalea
Magnolia
Boxwood
Firethorn
Dwarf Rhododendron
Atlas Cedar
Catlin Elm
Japanese Andromeda
Crape Myrtle
Dwarf Horsetail Grass

Protected Indoors (No Frost)

Snow Rose– Serissa
Mexican Heather
Podocarpus
Ivy
Pomegranate
Olive
Camellia
Rosemary
Citrus
Bamboo
Ficus
Natal Plum
Gardenia
Black Mondo Grass
Sweet Rush—Acorus Grass