

Wintering bonsai in the Ottawa area

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V2.2 October, 2018

Ottawa winter is different than Toronto winter...!

The tropical and sub-tropical

- Ficus, Serissa, Bougainvillea, Fukien tea, Japanese Boxwood
- Some of these trees will die at 0 Celsius
- Challenge: quality of light, humidity and insect
- Needs to be as close as possible to a window or have artificial light (or combination of the two)
- Watering is less frequent then summer period
- Will likely loose leaves
- Will grow larger leaves



Some trees like Bougainvillea will lose up to 90% of their leaves even with combination of natural and artificial light

Leaves are turning yellow just 2 weeks after being inside



Reducing the quantity of foliage

- To allow all area to receive more light specially on lower branches
- To have better reach to the insect



Controlling insects in the winter:

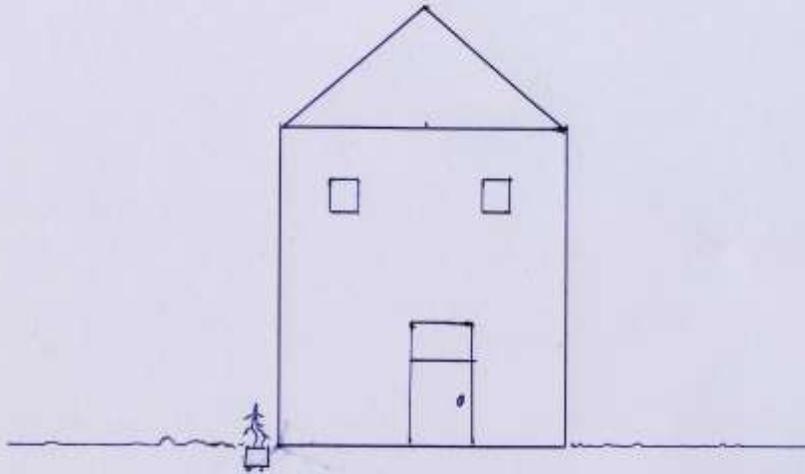
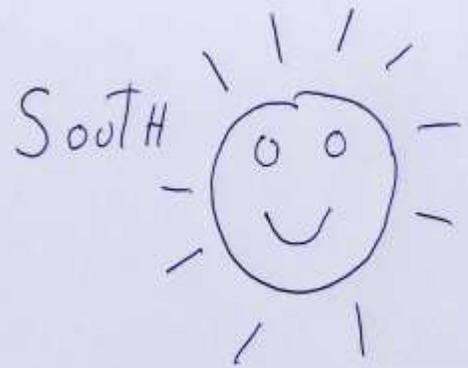
- No natural predators in the house
- Insecticide are not killing all insect but control population
- Protect your soil with plastic bags before applying insecticide



Hardy trees: can stay dormant outside in our winter

- Cedar, Larch, Mugho pine, Jack-pine, garden Boxwood, Cotoneaster, Amur maple
- Need to have their root at ground temperature
- A hardy tree cannot survive our winter on a high-rise balcony
- Need to be protected from the sun, the wind and warm weather which melt the snow in January
- Cover them with snow

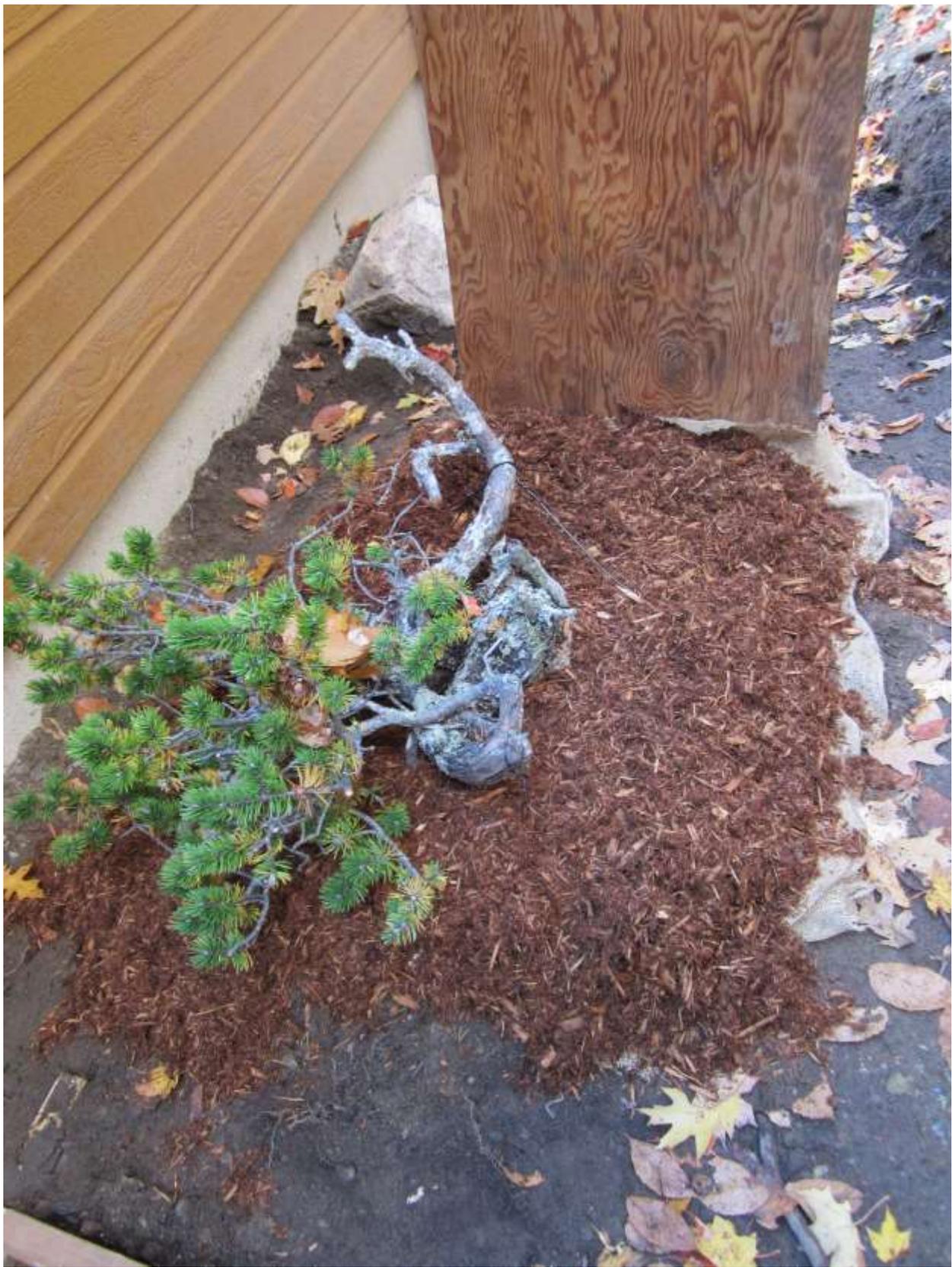
North











An alternative method

- A Styrofoam box on the ground
- Suitable for some semi hardy trees: Japanese maple, Korean Hornbeam, Japanese white pine
- Also ideal for protecting trees against winter damage



Other challenges for hardy trees:

- Watering: do not forget to check humidity in the soil
- Mouse, rabbit and deer
- Ice storm and melting snow

Consider a protection for the overall shape of the tree (e.g. A-frame structure above the tree or Styrofoam cones). Place Styrofoam cone after the ground is frozen.



Protect trunk of leafy trees with metal screen to avoid mice and rabbit eating the trunk



Using snow to protect our trees:

- Against the damaging winter sun
- Against the wind
- Against the ice storm
- And extend the winter ...!



Semi hardy (i.e. no colder than -5 Celsius)

- Japanese maples, Trident maple, Japanese black pine, Japanese white pine, Korean hornbeam
- Need to be dormant in an environment where temperature can range between -2 C to +4 C
- Cold room, heated garage, window well and possibly a fridge
- Beware of unheated garage
- Ensure watering...! Schedule can vary between weekly and every third week

Five broad categories based on temperature requirements and dormancy requirement:

Category	Dormancy type	Nighttime temperature	Daytime temperature	Species
Tropical	none required	Min 15C	Max 25C	Fukien Tea, Ficus, Sageretia
Sub tropical	slight cool down	Min 10C	Max 18C	Serissa, Fuchsia, Bougainvillea
Temperate	Cool down required	Min +2C	Max 10C	Azalea, Pyracantha, European Olive, Chinese Elm
Semi hardy	Dormancy required	Min -5 C	Max +4C	Japanese maple, Korean Hornbeam, Japanese Black Pine, Chinese Elm, Trident maple (-2C to +2C)
Hardy	Dormancy required	Min -10C	Max +2C	Larch, Cedars, Jack Pines, Cotoneaster, Amur maple, Austrian black pine, Mugho pine, Junipers

- Many species can adapt to condition of a warmer category. For example, we tend to mix our tropical and sub tropical into a single category.
- The important factor in mixing categories is to respect the lowest common denominator in the temperature range. For example, a Fukien tea will suffer if minimum nighttime temperature goes below 15 C which mean if you have a Serissa and a Fukien tea, you need to respect the lower range of the Fukien tea.
- The cool down period required for the temperate category can be extended in a cold room (with or without light) and become a dormancy period.
- The dormancy temperature required for semi hardy and hardy native trees does not need to below +2C which mean that you could use a cold room (with or without light) kept at +2 C for a combination of trees from the temperate, semi hardy and hardy category (i.e. Azalea, a Japanese Maple and a Cedar)
- There is no photosynthesis process during a dormancy period which means that no light is required
- A dormant tree still needs to be watered but less frequently.

Tropical and sub tropical trees

Light condition

- the most challenging aspect of keeping healthy bonsai inside
- the trees will likely lose vigor indoors which is normal in our climate
- needs as much light as can possibly provide
- window location (south, east and west) and distance from window (between 6 and 18 inches)
- artificial light
 - o will add valuable hours of missing light (keep lighting system on for 14-16 hours/day)
 - o needs to have broad spectrum which include a lot of blue (for leaf development) and less of the red (for flowers development)
 - o Metal Halide lighting system as nice blue spectrum and is best for many trees
 - o High Pressure Sodium lighting system are more suited for flowering and not so much for bonsai
 - o Fluorescent lighting system can be used if combined by broad spectrum

Temperature

- adjust to match lowest common denominator of the group of trees

Humidity

- one of the indoor challenges
- tree loves to have high humidity (50-80%)
- house in winter are often between 30 and 40% humidity
- can be improved by using a humidifier

Air circulation

- tree love to have air circulation around them
- can be improved by small fan

Watering

- will require less frequent watering than outdoors in summer
- will vary depending on room temperature and humidity
- will likely vary between 2 to 4 days between watering

Insect

- another indoor challenge
- insect will develop more indoors since there is no natural predators
- might need to treat with insecticide during winter
- best practice is to treat tree with insecticide 3 weeks in a row before bringing tree indoors

Special note: baseboard heater

- a tree just above a baseboard heater will dry much faster and foliage could burn

Temperate trees

Light condition

- no lights required if kept in cold dark room in dormancy mode
- most temperate trees can stay dormant in cold room until spring
- if not kept in dormancy mode, then same lighting condition as mentioned in tropical category
- if tree is brought out of dormancy during winter, then a gradual adaptation to light is required

Temperature

- this category of tree loves to have a cool down period where the temperature varies between +2C and +10
- if kept in a cold room, the temperature can be between +2C and +5C
- it is preferable to avoid bringing the tree directly from the cooler outside condition to indoor warm condition. It is best to place the tree in a room where the temperature can be kept below 15C

Humidity

- not applicable if kept in cold room dormant
- same challenge as tropical if tree if tree is kept active

Air circulation

- not applicable if kept in cold room dormant
- same challenge as tropical if tree if tree is kept active

Watering

- every 2nd or third week if kept dormant in cold dark room
- will vary between 2 and 4 days depending on room temperature and humidity if tree is kept active

Insect

- less of a problem is kept in a cold room
- same challenge as tropical if kept active

Special note: baseboard heater

- avoid such a location for this category

Semi hardy trees

Light condition

- no light required in dormancy period
- will require a re-adaptation to sunlight period in the spring (either natural or simulated)

Temperature

- cannot support our winter
- need serious protection that will keep temperature between -5C and +3C
- best kept in cold room

Protection methods

- Pot in the ground
 - o the tree will likely die
- Window well
 - o the leakage of heat will provide potentially adequate condition for root temperature
 - o the hole should not be covered to allow snow to accumulate and water to reach
 - o extra soil insulation will be required
 - o potential location but very risky
- Shed
 - o the tree will die unless shed is insulated and heated
- Garage
 - o The temperature needs to be controlled (i.e. heated garage) or tree will die
- Apartment balcony
 - o Tree will die if no protection
 - o Needs to have a insulated box with thermostat and source of heat
- Cold dark room :
 - o excellent as long as temperature is between -2C and +2C (use range that will suit the lowest common denominator (i.e. be careful with Trident maple)
 - o provide extra flexibility for root development and repot if temperature kept at +2C
- Cold green house
 - o excellent as long as temperature is between -2C and +2C
 - o can the temperature be maintained during sunny days?
 - o provide extra flexibility for root development and repot if temperature kept at +2C
- On outside table
 - o the tree will die...

Humidity: not applicable

Air circulation: not applicable

Watering

- dormant tree still need to be watered to keep some moisture for health of root
- frequency of watering is much less then during growing season (i.e. every 2-3 weeks)

Insect

- insects are not a likely problem in winter but
- in protected are like cold room some insect could still reproduce (i.e. scale)
- application of dormant oil is recommended if tree as insect or as precaution

Hardy trees

Light condition

- no light required in dormancy period
- will require a re-adaptation to sunlight period in the spring (either natural or simulated)

Temperature

- can support our harsh winter condition as long as roots are protected and stay at above -10C
- will do very well in cold room that stays around +2C

Protection methods

- pot in the ground
 - o in sun protected area to avoid potential mid winter unfreezing of soil (must avoid south side of the house)
 - o best location is in a shady area close to the foundation of a house
 - o dig a hole in the ground to place pot so that top of pot is at ground level
 - o must be in good quality pot that won't break
- in window well
 - o the leakage of heat will provide nice condition for root temperature
 - o the hole should not be covered to allow snow to accumulate and water to reach
- Shed
 - o temperature will fluctuate as much as outside temperature which not good
 - o needs to be insulated and heated to keep temperature stable
- Garage
 - o The temperature needs to be controlled (i.e. heated garage)
 - o An unheated garage is not a good solution since it can become too cold
- Apartment balcony
 - o Tree will die if no protection
 - o Needs to have a insulated box with thermostat and source of heat
- Cold dark room :
 - o excellent as long as temperature is between -5C and +2C
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 - o the tree will die...

Humidity: not applicable

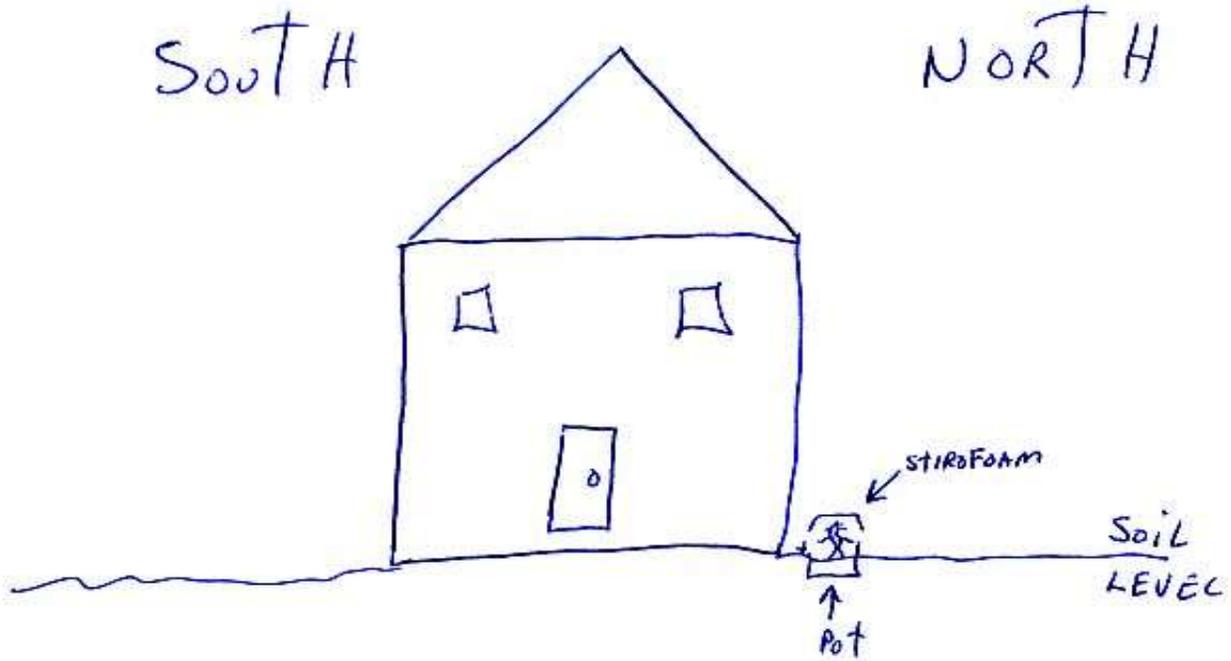
Air circulation: not applicable

Watering

- dormant tree still need to be watered to keep some moisture for health of root
- for pots in the ground outside, nature should provide the required watering
- frequency of watering is much less then during growing season

Insect

- insects are not a likely problem in winter but
- in protected are like cold room some insect could still reproduce (i.e. scale)
- trees kept outdoor could serve as food to small animal (mice, rabbit)
- application of dormant oil is recommended if tree as insect or for precaution



Dig a hole as close as possible to the foundation of the house (ideal area) or choose an area in the shade where the snow does not melt in the winter.

Place the pot in the hole and fill the empty space between the pot and the ground to ensure that there is no empty space. This will ensure that the roots of the tree will be at ground temperature.

For trees that have detail wiring it will be important to protect the wiring job from the weight of the snow in order to avoid unpredictable change of shape. The protection could be a white cone on top of the tree with open side to allow rain and snow on the roots. A chair on top of the tree could also serve that purpose as long as the seat of the chair is just above the top of the tree.