

Best Planting Practices Series

The Minnesota Urban Forestry Outreach Research and Extension (MnUFore) Lab
2017

Category 1 – Bare-root Nursery-grown Trees and Shrubs.

Long-term Planting Success Often Begins With A Good Sweat!

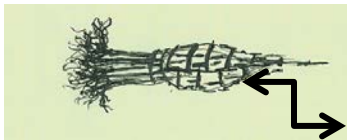
The shipment of bare-root trees has arrived fully dormant, and only two weeks until planting day. Are they ready to be planted in the landscape or installed in the gravel bed? Or, are they in such a deep state of rest that it could be days or weeks before they finally leaf out...if they leaf out at all? It's time to start sweating, but not about everything.

Bare-root trees and shrubs are field-dug in the autumn, placed in jacketed cool storage , aka “tree refrigerators,” at around 32° F and 95% humidity for most of the winter and then shipped out, still in some state of winter rest. Some species will quickly begin active growth with no prompting when planted while others need to be gently awakened with a good “sweat.”

“Sweating” those trees, shrubs and vines that are in deep states of rest is a generations-old, reliable tree nursery practice that has very little (if any) research evidence to explain the process and why it works. But it works. It is a recipe that uses three ingredients to awaken those sleeping beauties: 1) Warmth 2) Humidity and 3) Time.

The Sweating Recipe

1. Separate the species to be sweated and bundle them up in bunches of 5-10, depending on their size. Do not mix species in a sweat bundle because different species usually require different amounts of time.

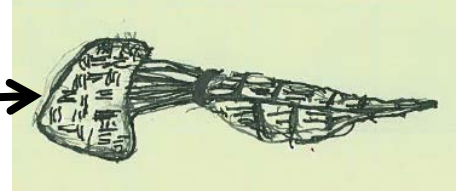


Bundle the trees or shrubs together by species. For ease of handling, bind the stems/branches together with twine.

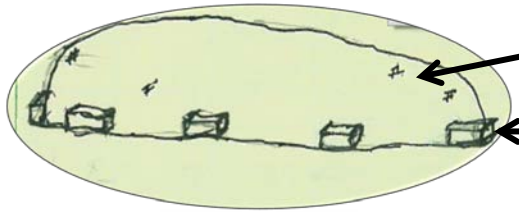
2. Capture some warmth. Place the bare-root plants on the bare ground or the floor of a hoop house, barn or garage. If possible, temperatures should be supplemented if they are not in the 45-70°F range in the built structures. Warmth radiating from the earth is generally enough. Warmth from direct sunlight is too much and will likely damage the plants, so keep the bundles of joy shaded.

3. Bring on the moisture, but only on the roots. Syringe the roots thoroughly (spray with a hose or dip into tank) and then cover them with materials that will hold moisture, such as wet straw, wet burlap, wet excelsior. **Do Not cover the stems and branches with these materials.** If for no other reason, buds need to be checked almost daily, so they need to be accessible and visible.

Wrap the roots in wet burlap or pack with wet straw or excelsior



4. Complete the greenhouse. Cover it all – roots, stems and branches – with clear or opaque plastic and anchor down the edges like a burrito to keep the interior warm and humid...just like a greenhouse.



Clear plastic covering all roots and branches.
Bricks or anything to weight down the edges.

5. Start inspecting buds after 2-3 days. As soon as bud swell begins –usually recognized by enlarged buds and separating bud scales – it’s time to pull those species out and get them in the ground or the gravel bed. They are now ready to meet the tulips as long as outdoor temperatures are reliably above freezing.

How Long Does This Take?

It depends...on the species, the size of the nursery stock (bigger takes longer), and the length of time they are been in cold storage. Some plants may require only 3-4 days while others as long as two weeks.

Don’t try to predict. Start the sweating with all of the needs species at the same time, and pull them or uncover the tops as the buds begin to break.

Which Species are the Needy Ones?

There’s some controversy here. Depending on the resource there may be 16 to almost 40 different trees, shrubs or vines that either require or respond well to a good sweat.

The Complete List

Trees:

Maples (*Acer*)
Serviceberry (*Amelanchier*)
Birches (esp. *Betula nigra*)
Musclewood (*Carpinus*)
Hickory (*Carya*)
Hackberry (*Celtis*)
Eastern Red Bud (*Cercis*)
Pagoda Dogwood (*Cornus*)
Hawthorn (*Crataegus*)
Beech (*Fagus*)
Ash (*Fraxinus*)
Honeylocust (*Gleditsia*)
Crab/Apple (*Malus*)
Mulberry (*Morus*)
Black Gum (*Nyssa*)
Ironwood (*Ostrya*)
*Amur Corktree (*Phellodendron*)
Plums (*Prunus*)
*Ussurian Pear (*Prunus*)
Chokecherry (*Prunus*)
White Oak group (*Quercus*)
Skunkbush Sumac (*Rhus*)
*Black Locust (*Robinia*)
Weeping Willow (*Salix*)
European Mt-Ash (*Sorbus*)
Lilac (*Syringa*)
Bald Cypress (*Taxodium*)
Lindens (*Tilia*)
Elms (*Ulmus*)

Shrubs and Vines:

*Barberry (*Berberis*)
Trumpet Vine (*Campsis*)
Variegated Dogwoods (*Cornus*)
Cotoneaster (*Cotoneaster*)
Potentilla (*Potentilla*)
Roses (*Rosa*)

****Be Careful With These Species:
Check with your state regulatory
agency to determine whether they
are listed as invasive in your state.
Note: only the female Amur
Corktrees are invasive for that
species.***

What if Sweating is Skipped?

1. They will experience a shorter growing season that first year.
2. Trees and shrubs will enter the winter with lower energy reserves due to the abbreviated growing season, and will be more likely to suffer winter season damage to roots, cambium and buds.
3. There will be less root growth that first season. Roots need photosynthates (sugars and starches) to grow.
4. People give up, think they are dead, stop watering and/or remove the sleepy ones.
5. Nothing...if the trees and shrubs have been sweated before they were shipped to you. Inquire whether this has happened from the nursery supplier.

References Consulted: (all available on-line)

Caring for Bareroot Nursery Stock. Lawyer Nursery, Inc. No date, but a very good guide.

Creating the Urban Forest: The Bare Root Method. Urban Horticulture Institute, Department of Horticulture, Cornell University, Ithaca, NY. 2009. There is a lot more information than just “sweating” in this guide.

Pest Update (April 15, 2015). Vol. 13, no. 9. Author was John Ball, Forest Health Specialist SD Department of Agriculture, Extension Forester SD Cooperative Extension. The section on “sweating” starts on page 2.

Ellison, Dana S., Robert Schutzki, Pascal Nzokou, Bert Cregg, 2016. Root growth potential, water relations and carbohydrate status of ash alternative species following pre-plant storage. *Urban Forestry & Urban Greening*, 18(2016):59-64. If you like reading research-based information from a refereed journal, this is a good read.

Sweating. In: *A Practical Guide to Handling and Growing Bareroot Trees*. No date. Femrite Nursery Co.

Halcomb, Mark and Amy Fulcher. 2017. *Sweating Nursery Stock to Break Dormancy*. University of Kentucky College of Agriculture.

Sweating Nursery Stock. In: *Chapter 6 of Planting and Pruning of Woody Plants. Protecting Existing Trees From Construction*. No date. Minnesota DNR.

Sweating of Nursery Stock. In: *Inspection & Contract Administration Manual for MnDOT Landscape Projects*. 2013 edition. A comprehensive manual on tree planting.

Sweating Bare Root Plants. In: *2014-2015 Cross Nurseries, Inc. Wholesale Price List*.

Temporary Storage and Handling of Container, Bareroot and Cutting Stock. No date. *Plant Materials Technical Note Number MT-51*. USDA Natural Resources Conservation Service (NRCS), Montana.

Tree Sweating – When Is it Needed? In: *Plant Chat, NRCS Spring, 2007, Volume 7, Issue 2*.

*Gary Johnson
Professor, Urban and Community Forestry
Department of Forest Resources/Extension
University of Minnesota
Saint Paul, MN 55108
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