

Maintaining Seedling Vigor

The key to maintaining seedling vigor is keeping them:
FREE FROM PHYSICAL DAMAGE
MOIST (90-95% HUMIDITY)
COOL (34° – 36° F)

Respiration is the conversion of food reserves to energy.

In this process, 60% of the energy is available of work, but the remaining 40% is given off as heat.

Respiration rate is a function of temperature; as temperature increases, respiration increases, as does the amount of heat expended.

Transportation: Refrigerated trucks or vans are the only way to maintain cool seedling temperatures (35°F) and high humidity (95%). This assures that seedlings are delivered to the site with the best potential for survival.

If refrigerated transportation cannot be provided, protect seedlings from three primary sources of heat: solar radiation, exhaust system, and internal respiration. If possible, transport on cool cloudy days, early morning, late evening or at night.

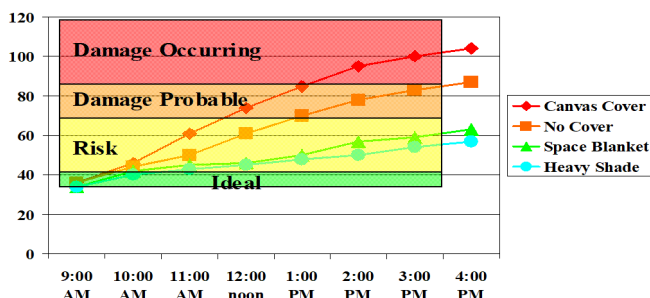


Art from 'A Guide to the Care and Planting of Southern Pine Seedlings' (Mgmt. Bulletin R8-MB39, 1989) Cartoons by Barry Nehr.

AT THE PLANTING SITE:

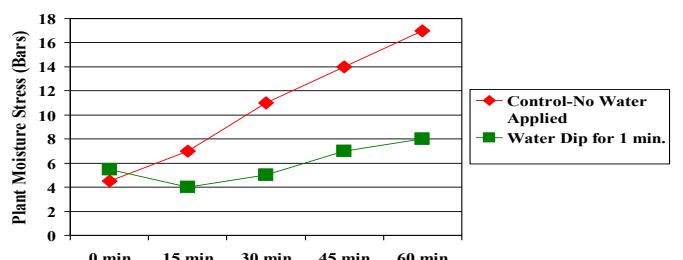
- On-site storage should be for one day or less. Transport only what will be needed for that day's work; and if storage is close enough to the planting site, make a couple of trips to minimize the time out of refrigerated storage.
- Protect all packages from the sun.** Place them in dense shade or wrap in a reflective tarp.
- Do not open packages until they are needed. If you do open a package, reseal as soon as possible and repair tears or punctures.
- Always keep the seedlings shaded and minimize handling.** If it is warm, windy and/or sunny, construct a temporary and/or mobile shelter to protect the seedlings during the handling process. **This is when seedlings are most susceptible to physical damage, handle with care!**
- If the seedlings appear dry, sprinkle water on the roots or dip the roots in water for one minute; never let the seedlings sit in standing water! Be careful to maintain root moisture after dipping them; don't let them dry out! Roots that are visibly dry could indicate a problem.
- Place the seedlings into planting bags, a bottom layer of moist water retaining material is helpful, so that the roots are protected from warm dry air and the sun. Remove one seedling at a time for planting to minimize root exposure to sun and wind.

Sunlight can cause large increases in seedling temperatures



(Adapted from OSU Extension Circular 1095)

Desiccation of water-dipped and undipped seedlings



(Adapted from OSU Extension Circular 1095)

Seedlings are coming out of dormancy and cannot tolerate much stress. Handle with care. Don't throw, drop, or excessively stack the bags. Keep the seedlings cool and moist.