Nursery Cooperative MANAGEMENT ALERT 2018 - 01

CHECK FOR FREEZE INJURY

This winter has been much, much different than last winter with respect to temperatures and the potential for freeze injury. Except for the excessive cold temperatures, winter was behaving "normally" with the accumulated chilling hours of 688 at a central coastal plain location from November 15, 2017 through January 15, 2018. This compares to the 351 hours for the same location and time period last year (2016-17) and 317 chilling hours in 2015-16. Accumulation of chilling hours is correlated with freeze tolerance in seedlings (not storability). In any one year, seedlings with more accumulated chilling hours are more tolerant of freeze injury than seedlings in the same year with less chilling hours. If you thought this winter was colder than last year, you are correct. The average maximum, minimum and mean temperatures in December 2017 were 3-10°F colder than in December, 2016. While chilling hours decreases the probability that freeze injury may occur when cold fronts pass through the region, it needs to be emphasized again that there is no "magical" number of chill hours above which freeze injury will not occur.

With temperatures in December 2017 and January 2018 dropping to record lows throughout the region there is the possibility of freeze injury on seedlings, despite the chilling hours. Now is the time to check your seedlings.

What to check: Your most freeze-sensitive families. Choose any coastal seed lot; 7-56 is sensitive to freeze and a good indicator of possible injury. Longleaf is more susceptible than loblolly. Roots are more susceptible than the stem.

How to check: With your fingernail or knife, remove just the bark from the stem around the root collar and continue into the root region. If you saw foliar injury, you may want to remove the bark above the root collar. You are looking for brown tissue just below the bark. Be sure to remove all the bark since it is very common for the brown streak indicating freeze injury to be located on just one side of the stem. (See photos below.)

Keep Alert:

1. Be aware of future warm nights and days followed by temperatures dropping rapidly into the lowers 20s or teens.
2. Monitor your soil moisture during warm nights and days and irrigate a couple days before the temperature drop below 25°F. We have recommended irrigating if at all possible prior to a freeze event. This is especially important if mild weather has preceded the freeze event. Moisture in the soil will help to insulate the seedling roots.
3. The longer the injured seedlings can stay in the nursery without lifting or shipping after injury, the greater the chance of them growing out of the freeze injury.
4. Following a possible freeze injury event, plant 5 – 10 seedlings from freeze sensitive families in 1-gallon pots and keep in a warm location. After 7 days, gently scrape the bark 1" above and below the root collar to check from freeze injured brown tissue.
5. Following a possible freeze injury event, monitor seedlings by outplanting at the nursery 10 -20 seedlings from any families you consider freeze sensitive. Keep these seedlings until at least June of this year. This will provide an indication of whether seedlings shipped from this same family may have freeze injury from your customers.