



# Management Alert 21-01

Southern Forest Nursery Management Cooperative

## BE ALERT OF UPCOMING FREEZE INJURY CONDITIONS

In the next few days specifically Saturday the 13th of February 2021 through Tuesday the 16th of February 2021 we will experience an extended freeze event across the central and southern US. Extremely cold weather conditions forecast for the next 5 days may affect newly planted seedlings. There is always a potential for freeze injury when seedlings are exposed to extremely cold temperatures. Of concern is that the recent warm evening temperatures ( $>46^{\circ}\text{F}$ ) experienced are likely to result in the de-acclimation of seedlings to freeze injury (South et al. 2008). This weekend and into early next week, temperatures are expected to go below freezing (Figure 1). This is more pronounced in the central portion of the US; Oklahoma, Arkansas, Texas, Louisiana, Mississippi, Alabama and Tennessee. The jet stream is somewhat unstable (less west to east, and more north to south) and therefore, these temperatures could move more east into Georgia, North and South Carolina, etc. These cold temperatures are of concern for landowners who have recently planted or are in the process of planting seedlings for reforestation. **Freeze injury or seedling death is a possibility.**

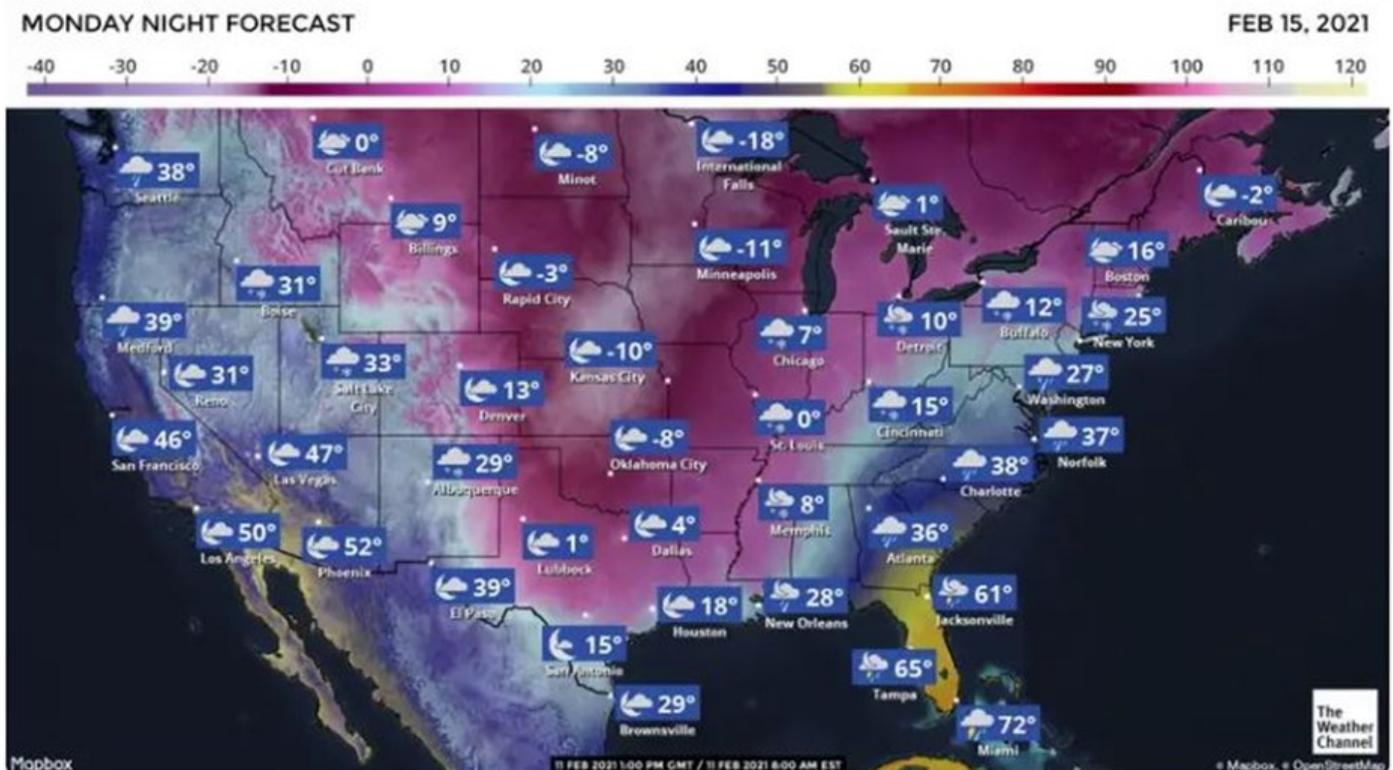


Figure 1: Predicted cold weather predictions for February 15th (<https://weather.com/maps/tendayforecast>)

### **Here are several points to consider:**

1. A positive point is that the weather is expected to come through accompanied by rain and snow that will help moderate the soil temperatures.
2. Despite the number of accumulated chilling hours to date, root system of southern pines never go dormant.
3. Seedlings should not be planted when the temperatures are near freezing. We would not recommend any planting of new seedlings until the daily highs are above freezing and the low temperatures have moderated.
4. Recently planted seedlings have not begun to grow new roots and the soil around the root zone may not have properly settled around the seedling.
5. The impact of these temperatures may not fully be known until seedling growth begins in the spring. Landowners should be diligent to check seedling survival for several weeks beginning in the spring.
6. If we have a period of moderate temperatures over the next few months, it may be possible to check seedlings for freeze injury. Follow the steps below

### **Keep Alert:**

1. For nurseries monitor your soil moisture during warm nights and days and irrigate a couple of days before the temperatures drop below 25°F. Moisture in the soil will help insulate the seedling roots.
2. 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 next year. This will provide an indication of whether the seedlings shipped from these same families may have freeze injury.
3. Following a possible freeze injury event, plant 5-10 seedlings from freeze sensitive families in 1 gallon pots and keep in warm location. After 7 days, gently scrape the bark 2" above and below the root collar to check for freeze injured brown tissue.

### **How to check for freeze injury for outplanted seedlings:**

1. Wait for 1-2 weeks or until the temperatures have warmed up. Repeat again in several more weeks to confirm.
2. Scrape the bark away from the stem from about 2" above the root collar down into the root system.
3. Look for light brown colored tissue which is an indication of freeze injury (Figure 2).
4. Many times the brown coloration will be limited to one side of the stem. These seedlings may survive if environmental conditions are favorable, however, first year growth will be impacted.
5. If the brown coloration covers the entire circumference of the stem, the seedling will most likely die.



**Figure 2.** Light brown colored tissue, which is an indication of freeze injury.

Reference: South DS, Starkey T, Islam MA and Jacobs DF (2008), Warm nighttime temperatures affect the ability of loblolly pine (*Pinus taeda*) seedlings to tolerate freezing. Research Report 08-02, Auburn University Southern Forest Nursery Management Cooperative. 10pp