

Frost Protection Advisory  
March 26, 2012

The mild winter and the warm temperatures last week have resulted in buds losing dormancy and the need to begin frost protection when temperatures fall below tolerance. Tonight's forecast is for cold *and* windy conditions, presenting a challenge for frost protecting using sprinklers.

If the temperature approaches tolerance and the winds are still blowing, impact sprinklers may freeze. All sprinkler types will NOT dispense water evenly leading to two additional potential problems: 1) Not enough water will reach some areas of the bog to reach the 0.1 inch per hour needed to protect from frost; and 2) In areas where limited water is applied, the ice that forms may evaporate in the wind, causing damage to the buds.

The formation of ice protects from frost because in the transition from liquid water to solid ice, heat is released (heat of fusion) -- this heat release protects the buds from frost damage. The 0.1 inch rate is needed to get enough heat release.

As the ice transitions back to water (melting) heat is taken away from the plants -- this is why we do not turn sprinklers off until the temperature rises above tolerance. However, in cold, windy conditions, the ice can evaporate into water vapor, skipping the liquid phase. If this happens the loss of heat from the plants during the transition is 7 times more than if the ice melted. So if on a windy night you sprinkle and form ice that is 'dry' (no liquid water on the surface due to the wind), evaporation loss may occur, damaging the plants.

So what to do? If your tolerance is less than the predicted low, you will not need to protect unless the wind dies, in which case you would turn on sprinklers as usual. If your tolerance is above tonight's predicted low (the air temperature prediction), consider a frost flood. This consists of bringing water up above the surface of the soil into the base of the stems -- you do not need to cover the plants. This flood can be held over for 2-3 days if the buds have not begun to break. Based on weather reports, if you do a flood, plan to keep it for Tuesday night as well.

If you cannot flood, hold off sprinkling until you get close to your tolerance, this should only happen when the wind starts to die out based on the current predicted low.

Current tolerance at State Bog:  
Ben Lear and Rutgers hybrids 22F  
Early Black and Stevens 20F  
Howes 18F

Cape bogs may be behind State Bog, many inland locations are more advanced.  
Check the tolerance on YOUR bog.