Freeze Damage in Tobacco

Recent unseasonably low temperatures have caused different degrees of damage to tobacco plants across the State. The extent of the damage will depend on several factors including stage of plant growth, location of plants (greenhouse, outside beds and set plants), amount of foliage on plant, time lapse from setting, location of fields, and actual temperature.

Plants can tolerate a few degrees below freezing, but actual temperature at the plant level can be several degrees below that predicted or shown on local weather reports. For example, local weather on May 22 at 7 pm showed a temperature of 32°F at Frankfort. With the topography of Franklin County considered, areas around there could have reached 26°F or lower. The temperature in low-lying areas will generally drop lower than higher areas due to colder air sinking.

Freshly set tobacco, like freshly transferred plug plants, are more susceptible to damage due to normal transplant shock coupled with the freezing temperatures. Set tobacco will have less protection from surrounding plants, but could get some protection due to moderation of temperature from the soil surface. The benefit is minimal.

Greenhouses offer the most protection, but only if heaters are still on. Evaporative cooling can drop temperatures in float systems lower than the ambient or outside temperature. Uncovered float plants are extremely susceptible, but even cover outside beds can have damage.

Foliage on smaller plants tends to provide less protection for the bud and damage can be more severe. Smaller plants may be in a more tender state, but even ready to set plants can be tender due to high fertility or high temperatures during the day. Sunny conditions the day before can predispose plants to injury, if high temperatures build up during the day.

Recently clipped plants will have more bud exposed and could show the most damage. Foliage may look severely damaged, but as long as the bud is OK, plants will recover. The extent of the damage may take time to assess. Plants that look totally water soaked may be beyond recovery. A check of buds can provide more insight into the damage. Plants may look terrible for a while due to extensive damage to the foliage. Leaf damage will turn brown or black, but as long as the bud is still green, plants will be fine. Generally, it takes about 3 days to know for sure, as buds begin to recover or continue to decline. Farmers should not be too hasty to reset or dump plants before making a reasonable assessment. Plants that look beyond hope can often recover to produce as good a crop as plants without damage.
The long-term implications are that bud damage may be slight, but still result in ground sucker development. Conditions are not as conducive for early flowering, but ground sucker development is expected.
Damaged plants in McLean Co. (Pictures courtesy of Greg Henson)

Four days later (Pictures courtesy of Greg Henson)