FALL FREEZE

It looks like we may have record or near record lows tonight. If we do have a freeze tonight, it will be about 2 or more weeks earlier than normal, although with the recent hot weather most corn and soybeans are at or near maturity, so the economic impact should be minimal. The main concern with the freeze will be its affect on the management of forages, especially sudangrass and sorghum-sudan hybrids. Alfalfa does NOT become toxic after a fall freeze. The following information from Brian Lang summarizes the effects of freezing temperatures on various crops:

**Corn and soybeans** usually require 28 F for a complete kill.

*Corn* within one week of physiological maturity ("black layer") killed by frost would be at about 3/4 milk line and suffer a yield loss of only about 3%.

*Soybeans* one week before physiological maturity killed by frost would suffer a yield loss of about 5 to 10%. Soybeans within one week of physiological maturity are two-thirds through the R6 stage. Soybeans that still have green beans in the pods should be left in the field for normal dry down, and then left in storage long enough for the green beans to turn to the brown color. Soybeans are safe from frost at the R7 stage, when the pods begin to turn yellow and brown.

**Alfalfa** usually requires 24 F to completely kill its topgrowth. Temperatures above 24 degrees F will cause visible damage, but the plant will continue to grow using the remaining leaf area. The main reason not to harvest alfalfa after a light frost is that the harvest would remove all of the leaf area, and the plant's continued development would be entirely at the expense of root reserves. To optimize plant development and its over-wintering ability, allow the plant to grow until a killing frost or mid-October; which ever comes first. If no killing frost occurs by mid-October and a harvest is desired, harvest the forage. The short daylengths and cold autumn temperatures will minimize the use of root reserves prior to the "soon-to-come" killing frost. Although alfalfa is not toxic after a frost, it sometimes does increase the chances for bloat problems when cattle eat recently frosted plants. The risk returns to normal when the frosted plants dry.
**Sudangrass and sorghum-sudan hybrids** require 28 F for a killing frost, however even a “light” frost requires special management. Prussic acid accumulates in the frosted tissue within a few hours after thawing and wilting. A “light” frost may damage just the tops of plants. If this occurs, delay grazing or harvest a few days after frost to allow the prussic acid to dissipate from the plant tops. Livestock can be returned to frost injured sudangrass (18 inches or taller) and sorghum-sudan (28 inches or taller) after 5 to 7 days.

Sometimes a “light” frost enhances development of young shoots from the base of the plants. If this occurs, delay sending livestock to graze this forage since these new shoots would be high in prussic acid. Ideally, wait for the new shoots to get to a proper grazing height, but more than likely a complete killing frost will occur before that would happen. Once a complete killing frost occurs, wait at least 10 days (wait until the frosted tissue is drying out) before grazing or harvest.

If haying the forage, the curing process decreases the prussic acid content as much as 75%, which removes the feeding concern. However, haying these forages this late in the season is nearly impossible because of poor dry-down conditions. If green-chopping the forage, chop only as much forage as the cattle will consume in 4 to 5 hours. Never green-chop the forage and let it sit on the wagon overnight. If ensiling, harvest at proper moisture for your storage structure to ensure good fermentation. This takes a minimum of 4 weeks. The fermentation process will reduce the prussic acid content. Since immature plants can contain higher prussic acid levels, leave this forage ferment for at least 8 weeks before feeding. Never allow horses to graze sorghums or sudangrass at any time.

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