The University of Tennessee

UT Extension

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IPM NEWSLETTER

Update for Field Crops and Their Pests

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Bookmarks: Freeze Injury to Corn Freeze Injury to Wheat Wheat Herbicide Plant Back Intervals Farm Management

We are currently experiencing a major cold front until early next week and the National Weather Service will likely issue freeze/frost warnings for several Tennessee counties, particularly Friday and Saturday night in western Tennessee. Temperatures are expected to drop below freezing, possibly into the 20's, for multiple nights which will likely cause damage to field corn and wheat. **Regardless of the crop, remember that it is not possible to assess damage immediately after a freeze. We need to allow 3 or more days of moderate temperatures after the last freeze to determine how well plants are going to recover.** The level of injury will vary depending on growth stage of the crop, actual low temperature reached and how long temperature stays below freezing. Below is information related to some types of damage that we may see and ways to assess freeze damage in corn and wheat.

Spring Freeze Injury in Field Corn (Angela Thompson, Extension Corn and Soybean Specialist)

Cold temperatures that set a crop back are never ideal, but fortunately corn can bounce back from moderate tip or leaf burn caused by frost damage. Our soil temperatures were above 70 degrees going into Wednesday, therefore it should take soils longer to cool down with the cool but sunny days predicted through Saturday. However, I would not plant any more corn this week, in case we experience colder than predicted temperatures.

Growth stage and Freeze Injury??

Corn is usually 'safe' from a freeze/frost as long as the growing point is protected below the soil. The growing point of a seedling is located deep inside plant tissues protected from changing surface temperatures until V5 or V6 (five to six true leaves). A freeze event can blight or kill the exposed leaves but **usually** the unexposed growing point survives and the plant will re-grow new leaves. Corn that was planted before the second week of March and has five or more leaves will be more vulnerable to injury than spike corn since the growing point may be at or above the soil surface. The following are some generalizations about corn growth stage and freeze injury potential:

- Seed: swelled seed could be chilled depending on how low soil temps drop which could delay germination; un-swelled seed should be o.k.
- Spike to 4 leaf (generally tolerates freezing temperatures of short duration): leaf or tip burn usually doesn't kill the plant.
- 5-6 leaf (more likely to have plant death if exposed growing point is subjected to temperatures below freezing).

Assessing Freeze Damage

Wait until late next week (3 to 5 days after last freeze) to give plants time to respond to warmer growing temperatures. Ignore those burned leaves-- we need to check the health of the growing point.

Dig up a few damaged plants and split the stems from top to bottom. The growing point will be located at the top of the pyramid-shaped tissue near the base of the plant. A healthy growing point will be light green to whitish in color and firm. Brownish, discolored or soft tissue is damaged and that plant probably will not recover. I remain optimistic that the majority of our corn crop is small enough to weather this cold front and come out blighted but in good shape.

Do Blighted Leaves Affect Regrowth??

The rate of recovery from frost damage will depend on how quickly temperatures warm up next week and whether plants have adequate moisture for growth. Small (1 to 3 leaf) corn will produce new leaves from a healthy growing point, pushing the dead growth out of the way in the process. Larger corn can sometimes have problems with dead tissue restricting the unrolling of new leaves. Some have tried mowing off the tops of larger corn to cut off the dead tissue. This may help speed up emergence of new leaves, but you should always mow at least 4 inches above the ground or you may do more damage than good.

More Purple Corn This Spring

In areas that do not receive a freeze, night temperatures in the 40's or below and day temperatures in the 60's or below can trigger purpling of seedling corn plants. Purpling of young corn is common any time corn grows under cool soil temperatures which slows root development and delays uptake of phosphorus. Purpling from cold temps does not affect later growth and yield. Some hybrids are genetically more prone to purpling than others. Moderate temperatures and adequate soil moisture following a cold front will allow the roots to acquire adequate phosphorus and new leaves to develop with their normal green color.

Freeze Injury on Wheat (Dr. Chris Main, Cotton and Small Grains Specialist)

Early maturing wheat is more susceptible to freeze injury than is later maturing wheat. Growth stage has plays an important role in how much yield loss can be expected. The following table was adapted from a Texas A&M publication.

Growth stage	Injury temps. (2 hours)	Primary symptoms	Yield effect
Tillering	12 F	Chlorosis, burnt leaf tips, silage odor, blue hue to field.	Slight to moderate
Jointing	24 F	Growing point death, burnt leaf tips, odor	Moderate to severe
Boot	28 F	Floret sterility, spike trapped in sheath, burnt leaf, odor	Severe
Flowering	32 F	Floret sterility, whit awns or heads, damage to stem	Severe
Milk	28 F	Floret sterility, whit awns or heads, discolored kernels	Moderate to Severe
Dough	28 F	Shriveled, discolored kernels	Slight to Moderate

When fields have damaged, but are not completely lost patients is the key. Wheat will typically recover to produce some grain, however losses will be severe. If you plan to cut damaged wheat field for hay,

it is strongly recommended that a forage sample be set to the Forage Testing Lab to check for the presence of nitrates. This is particularly true if wheat was grown with high nitrogen inputs.

If a field is a total loss rotation to an alternative summer crop is possible, but limited by herbicide use (see Dr. Steckel's remarks). Cotton may be the best rotation choice to take advantage of the nitrogen fertility investment made in the wheat. Make sure to follow the rotation restriction guidelines for the herbicides used on your wheat fields.

Recrop Intervals after Wheat Herbicides (Larry Steckel, Extension Weed Specialist)

As we all know, the potential for frost damage to our wheat crops is going to be high over the next few nights. Hopefully, the temperatures will not get as low as predicted and our wheat crop will escape serious injury. Unfortunately, I have seen this before where wheat was destroyed by a late frost. In those cases many growers replanted with corn to use the nitrogen. Other replanted with soybeans. Throughout much of next week many folks will be out assessing the injury to the wheat. Knowing when and what herbicides were applied to the frost injured wheat is a major consideration on a potential recrop decision. Harmony Extra XP has just reduced its labeled plant back restriction from 45 to 14 days for several row crops. The herbicides we typically used to control ryegrass, Osprey and Axial, have considerably longer recrop intervals. Below please find the recrop intervals for our commonly used herbicides in wheat:

Herbicide	Grain Sorghum	Corn	Cotton	Soybean
Express	14 days	14 days	14 days	14 days
Harmony Extra XP	14 days	14 days	14 days	14 days
Harmony GT	0 days	0 days	7 days	0 days
Osprey	10 months	12 months	90 days	90 days
Axial	120 days	120 days	120 days	120 days

Farm Management Update – (Chuck Danehower, Area Specialist – Farm Management)

The wheat market like some of the other markets has been trading at the highest prices that it has in years. Producers have reacted accordingly and aggressively forward priced or booked their wheat crop. With the potential for freeze damage in the forecast, producers are concerned and rightfully so on what their alternates are.

First, if you suspect freeze damage and a crop loss, contact your crop insurance agent and let him/her know and review your coverage. Even if you just have the CAT policy. If you determine that you have enough of a loss to plant another crop, don't destroy the remaining wheat crop until you get the okay from the crop insurance company. You don't want to jeopardize your claim. You will probably have to leave a strip to determine the loss. How will crop insurance work with planting another crop? If you have a history of double crop soybeans, then you can plant soybeans without any reduction in your claim. If you plant another crop such as corn, milo, or cotton, and you want insurance on that crop, then you will receive 35% of your claim after processing and the remaining 65% of your claim will be paid after the new crop is harvested. This assumes no insurance claim on the new crop. You can elect to receive the entire wheat claim, but you would be non insured on the new crop.

Second, if you have wheat booked and you are concerned that your contract won't be able to be filled, talk to your grain elevator about your alternatives. Until we actually have a crop loss, it is difficult for anyone to guess what can be worked out.

Third, if your loss is great enough, you may want to plant another crop into the wheat. Examine what crop can be planted. Their may be some crop restrictions based on chemicals that have been used. If there are no restrictions, then you could probably plant corn, cotton, milo, or soybeans. Most likely, you have some fertility still in your field. Certainly, your P & K will still be available, you have used some of your N. Depending on the crop, additional N may be needed. By the time you suspect whether you have a loss or not, if may be late to plant corn and the seed you want may not be available. Other alternatives may be milo, cotton, or soybeans. Milo seed has been tight, but some may still be available. The economics of crop selection will depend on your yield prospects, cost structure, and anticipated price.

With the exception of planting corn, there is plenty of time to make an **informed decision** on this wheat crop and whether another crop should be planted. Don't make a rush to judgement until all the **facts** are known. If we can assist you in making this decision, please contact your local UT Extension office.

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