



## Wheat Management with Freeze Potential

The potential for spring freeze damage on this wheat crop is on everyone's mind. We are worried too but we focus on this possibility every fall when we make wheat recommendations.

We use the Growing Degree Units (GDU) heat calendar to measure wheat growth. This table shows the GDU accumulation as of January 28, 2012 for our main growing areas.

Station	Planting Date	YTD GDU	Avg. GDU	2007 GDU
Manquin, VA	Oct. 15	1122	893	954
Suffolk, VA	Nov. 1	1061	901	1054
Red Springs, NC	Nov. 1	1028	888	1020
Monroe, NC	Nov. 1	670	565	656

We picked planting dates based on the earliest optimum soil temperatures for planting in each area. We have listed the 2012 YTD GDU, the average YTD GDU and a comparison to 2007, the year of the April 8th "Easter Freeze". All locations are ahead of the average GDU and very close to the GDU in 2007.

Wheat GDU are calculated at the 2" soil depth **not** air temperature and is an average of three days. Wheat will reach jointing between 1200 and 1400 GDU. Jointing is when the head moves above the soil.

It is important to remember that 70° in January is not the same as 70° in May because the days are still short. **Daylength is still the overriding factor limiting wheat growth in Jan./Feb.** even with the early-heading varieties.

### **Fall recommendations to avoid freeze damage:**

**Variety Selection:** An important recommendation is to plant late-heading varieties first. Late-heading varieties go into "hibernation" in early December and emerge in early February because the days are too short for growth. They will joint in the later GDU range.

**Seed Depth:** Wheat seed needs to be planted 1" deep. The seed is the plant thermometer and is most susceptible to freeze damage when planted too shallow (see photo). Shallow seeding encourages shoot growth at the expense of root growth.



**Seed Population:** seeding rates range from 1.5 to 2.1 million seeds /acre depending on tillage and planting dates. Planting early with conventional tillage allows greater tillering than planting no-till late and is seeded at lower rates. Some of the tall wheat observed in fields now is the result of too many plants pushing each other to reach sunlight due to over-seeding.

### **What do we do now?**

**Withholding nitrogen to "slow growth" enhances potential freeze damage.** Wheat is going to do what wheat does: grow. The purpose of applying nitrogen now is to get the 2nd, 3rd and 4th position tillers to develop. If we have a light/moderate freeze, the main tiller may get zapped but we still have these lower tillers that can produce heads. Starving wheat now means the plant may abort these lower tillers so if we do have a freeze, there are no other tillers to develop heads. The main tiller accounts for about 30% of the yields and in most freezes will be the one that gets hurt. Applying 30 to 60 lbs. /acre of nitrogen now, **based on the tiller count**, promotes the 2nd, 3rd and 4th position tiller production. **Manganese** is still horrible this year and can be added with **sulfur** in this application.

The 2007 freeze was the result of temperatures reaching a whopping 21° below normal. Once wheat joints, it takes 24° for two hours to kill the main tiller. After wheat reaches the boot, it takes two hours of 28° to kill the tiller.

In summary, our recommendation is to continue to manage for top yields. The mid-February forecast is for lower temperatures which will be very welcomed.