

Time to Assess Nitrogen Status of Small Grain Crops

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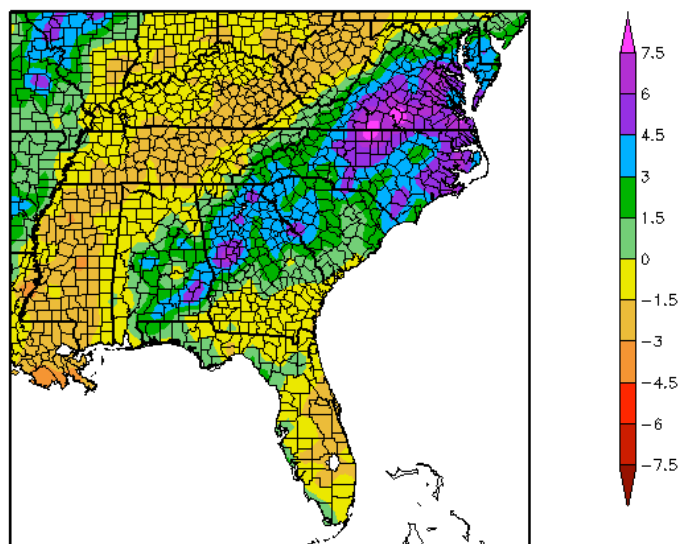
As of November 20, the Virginia Agricultural Statistics Service reported that 77% of the Virginia wheat crop was planted and 64% was emerged. This emerged wheat and most of the barley was planted timely and many fields have begun to tiller. At this stage, small grain plants are dependent on small, but rapidly growing, root systems to take up nutrients.

Nitrogen fertilizer applied to soil is converted to the nitrate form, which is water soluble and mobile in the soil system. Nitrate is subject to leaching below the root zone, especially in sandy-textured soils receiving significant amounts of rainfall. Under flooded conditions, N in the nitrate form can also be lost through denitrification.

Figure 1.

Departure from Normal Precipitation (in)
10/28/2009 – 11/26/2009

Figure 1 indicates the departure from average rainfall over the previous 30 days. Obviously, significant areas of Virginia and North Carolina have received over 6 inches more rainfall than the long term average over this time period. Much of the increased rainfall occurred within 1 to 2 weeks, and created both leaching and saturated soil conditions.



The implications of this to Virginia small grain

Generated 11/27/2009 at HPRCC using provisional data.

NOAA Regional Climate Centers

farmers is that the nitrogen, and possibly sulfur, that is essential for crop growth may have been lost via denitrification or leached below the roots of these small plants. This could result in nitrogen stress in these stands which can reduce tillering and overall yield potential. Nitrogen deficiency appears as yellowing of the lower leaves and overall pale green crop color (Figure 2), or with cooler temperatures, a reddish color in wheat.

Small grain fields should be assessed in early December and those that appear N deficient should be fertilized with adequate N to support plant growth until roots can reach N that is lower in the profile or until the first spring N application. This amount needed is not more than 20-30 lb N/ac. If fields are sandy-textured with low organic matter contents, it is more than 8 -10 inches to a significant clay layer, and the field has a history of sulfur deficiency, the application of sulfur, along with nitrogen should be considered.

Figure 2. Nitrogen deficiency symptoms in Barley. Photo courtesy of S. Reiter.

