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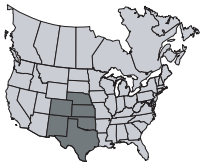

November 2011

Economist and Agronomist Agree…

Pay Close Attention to Nitrogen Fertility of Winter Wheat this Season

Role of Nitrogen in Wheat Production

Nitrogen (N) performs many vital functions in the wheat plant. Wheat requires about 2.0 to 2.5 lb of available N per bushel of grain produced. Wheat forage will take up about 40 lb N/ton, assuming 2% N in the tissue. Where wheat is grazed, it takes about 1 lb of N for each 3 lb of animal gain per acre.

Shortages of N may cause reduced tillering, reduction in head size, poor grain fill, and reduced protein content. Adequate N must be available to the wheat plant at all phases of development. Thus a combination of preplant and topdress applications is desirable in many environments. Splitting N applications generally improves use efficiency, minimizes risk to investment, and safeguards the environment. Topdress applications should be made early, prior to jointing, to maximize production efficiency. Split applications may not always be desirable, particularly in drier environments where there is low probability of N loss from the system. Therefore, all preplant (or all topdress given sufficient soil N at planting) application may be appropriate depending on specific conditions. Ultimately, timing, placement, and N source should be managed to fit the specific climatic conditions, soil type, and tillage system.

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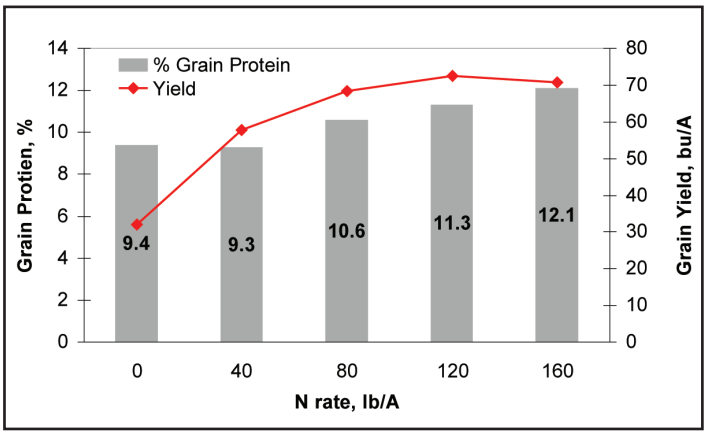

Figure 1. Relationships among N fertilizer rate, HRW wheat yield and protein content in irrigated wheat in western Kansas (***Source:*** *Schlegel and Schafer. 1994. Kansas Fertilizer Research. p. 31-32*). Nitrogen fertilizer was broadcast as urea. Study site was Manto fine sandy loam near Garden City, KS. Data is average of 4 years (1991-1994) and 4 application timings (all fall; all Feekes 3; split fall and Feekes 3; and split fall, Feekes 3 and Feekes 8). Protein level was adjusted using 5.7 conversion from Kjeldahl N.

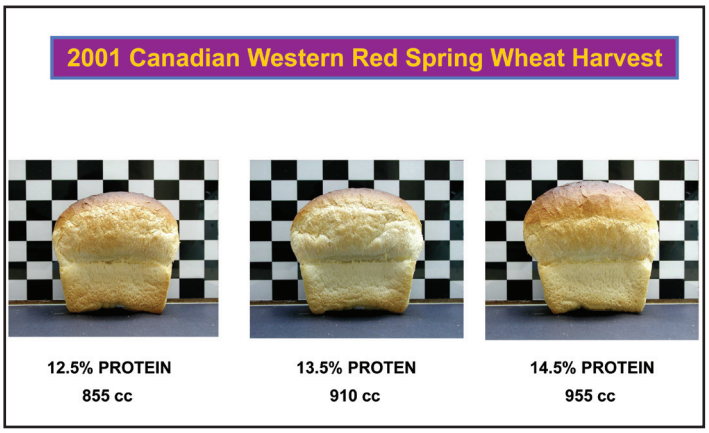

Figure 2. Impact of wheat protein content on loaf size. Higher protein content of wheat fertilized with N results in better quality bread. The lower protein wheat at left produced a more dense loaf of bread...855 cubic centimeters (cc)... while the higher protein wheat enabled the bread dough to rise more. Loaves shown are from 2001 Canadian western spring wheat harvest. ***Source:*** *Ken Preston, Grain Research Laboratory, Canadian Grain Commission, Winnipeg, Manitoba.*

Among the many indicators of N deficiency in wheat is reduced grain protein content (**Figure 1**). This is of concern because the protein level of grain influences bread making qualities of wheat. As protein content goes up loaf volume increases (**Figure 2**).

Price premiums for protein have routinely been paid for hard red spring (HRS) wheat produced in the northern Great Plains, but this practice has not been so common in the HRW wheat producing areas of the central and southern Great Plains. However, the 2011-2012 wheat production year may be an exception.

Impact of Grain Protein Content on Wheat Price

The Kansas City Board of Trade (KCBT) wheat contract is based on HRW wheat value and the Minneapolis Grain Exchange (MGEX) contract is based on HRS wheat value. The Chicago Board of Trade (CBT) wheat contract is typically based on the value of soft red winter (SRW) wheat which is mostly grown in the eastern part of the U.S. Hard spring wheat has higher protein than HRW wheat, which has higher protein than SRW wheat. Since this article is mainly targeted to a hard wheat audience, SRW wheat will not be further discussed.

At this writing, the KCBT December wheat contract price is $7.30. The MGEX December wheat contract price is $9.26. Both HRW and HRS wheat prices are at a premium to corn prices.

In Oklahoma and the Texas Panhandle, cash wheat prices are usually higher than cash corn prices. At this writing, Oklahoma wheat prices are significantly above corn prices, except in the Panhandle. At Hooker, Oklahoma, and Keys, Kansas, the corn price is $6.72 compared to a wheat price of $6.66.

In the Texas Panhandle, wheat prices are mostly 10 to 15 cents above corn prices. The wheat bid is for ordinary (11%) protein wheat.

The difference between wheat contract prices is most often the value of protein. For the Kansas City HRW wheat market, the basis for 11% protein is about 35 cents. The basis for 12% protein is about $1.05; for 13% protein, it is $1.33; and for 14% protein, it is $1.83.

At the same time in 2010, the Kansas City basis for 11% protein was a minus 35 cents. The basis for 12% protein was 10 cents, and the basis for 13% protein wheat was 30 cents. **The current HRW winter wheat basis (for protein) is about 70 cents higher than in 2010.**

The protein premium is also prevalent in the world market. Australia's 2011 wheat harvest has just begun, and concern exists about the protein content. A report indicated that buyers are paying a $2 premium for export wheat with 13% protein.

In most markets, 11% or higher HRW wheat protein will not be priced lower than corn and will not be used in the feed market.

Protein basis does not suggest that wheat prices will remain at current levels. World wheat stocks are above average. Protein wheat stocks are relatively tight. Wheat prices, for wheat with less than 11% protein, may decline while wheat prices for wheat with relatively high protein may maintain current levels.

The odds are that the protein premiums will remain into the 2012 U.S. winter wheat harvest. Higher protein levels should result in higher basis and higher local cash prices. Drought conditions are forecast to continue in parts of Texas and Oklahoma. Some of the drought area has sufficient moisture to establish a wheat stand. **Protein should remain an important price component at harvest.**

At the end of the day, where there is potential to make a wheat crop this season both an economist and agronomist agree that this is NOT a good season to skimp on N fertilizer applications. ■