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SPRING NITROGEN PLANNING FOR OPTIMIZING WINTER WHEAT PRODUCTION

Wheat acreage in the Southeast has risen again in 2012. Following a significant increase in acreage from 2010 to 2011, the 2012 crop is up another 8% to 4.7 million acres. This is the highest planted area in the region in the past five years. Mississippi and North Carolina had the biggest increases adding 140,000 and 100,000 acres, respectively. The South is not known as a major wheat producing region, but yield potentials are good, averaging 63 bu/A across the region.

Wheat tiller development occurs in the fall prior to dormancy and again when the wheat begins to green up in the spring. Ideally, the plants will form 2 to 3 tillers in the fall, which are often more vigorous and yield more than spring tillers. However, if not enough tillers formed during fall growth, then spring tillering is critical for attaining optimum yields and depends heavily on N availability. Spring tillering in the Southeast typically occurs between late-January and early-March as we move north through the region. Most recommendations call for only 20 to 60 lb N/A at this time as too much N can produce excessively lush growth that can result in lodging and increased disease problems.

The demand for N is highest between jointing and flowering. This stage usually occurs a month or so after green-up and is characterized by the leaves becoming more upright. Applying the bulk of the N requirement just prior to this period of rapid uptake results in efficient fertilizer use by the crop. The key to optimizing fertilizer rate in wheat is to match nutrient supply with crop requirement. The total amount of spring N applied in the Southeast typically ranges between 80 and 120 lb N/A.

In-season diagnostic tools can help guide the final spring N application. Many universities and dealerships offer tissue testing guidelines to fine-tune spring N rates. Tissue analysis is an excellent diagnostic tool, but requires collecting samples and laboratory analysis. Optical sensors offer a non-destructive method of determining N requirements in wheat. The use of sensor technology has not been rapidly adopted in the region, but is available through some commercial fertilizer dealers. Aerial and satellite imagery are other precision approaches used to identify the optimum spring N rate for wheat.

Most of the crop grown in the Southeast is soft wheat, but there are some acres of hard wheat that will benefit from a late-season fertilizer application. In hard wheat varieties grown for bread-making, increased grain protein is a desirable characteristic. Research in the Southeast has shown that grain protein is consistently increased with a 30 to 40 lb N/A foliar application between boot stage and heading.

To optimize production, the right fertilizer plan is needed this spring. 4R Nutrient Stewardship is focused on four central components: applying the right fertilizer source at the right rate, at the right time in the growing season, and in the right place. Each of the four "rights" is directly related to the other three in at least one way, interconnected into a unified, effective system. None of the 4Rs can be right if one of them is wrong. While some wheat production systems will have unique fertility needs, the scientific principles behind the specific recommendations are the same. To learn more about how the 4Rs can be applied to wheat production, visit the IPNI website www.ipni.net/video to view the video "The Right Way to Grow Wheat...4R Nutrient Stewardship".

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Abbreviations: N = nitrogen.