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THE RIGHT WAY TO GROW WHEAT...4R NUTRIENT STEWARDSHIP

Wheat is a staple in almost all human diets. In the coming decades, fertilizer will play a key role in producing the additional wheat needed to feed our rapidly growing population. 4R nutrient stewardship can help achieve the economic, environmental, and social goals of the sustainable agricultural systems needed to meet the global demand for wheat.

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. While some wheat production systems will have unique fertility needs, the scientific principles behind the specific recommendations are the same. These principles form the foundation of 4R nutrient stewardship.

The best fertilizer source for wheat will vary among sites and regions. Whatever fertilizer sources are determined to be the most appropriate, the nutrients must be in forms that the plant can take up. Both liquid and dry fertilizers supply nutrients in water-soluble, plant-available forms. However, caution should be used when making in-season applications of liquid fertilizer as foliar damage can occur. Early in the season there is virtually no risk of grain-yield-loss due to leaf-burn. However, later in the season, the risk increases.

The key to optimizing fertilizer rate in wheat is to match nutrient supply with crop requirement. Soil testing is a valuable tool for determining nutrient needs before the season begins. Once the crop is up, tissue analysis can help guide in-season nutrient applications.

Similar to fertilizer source, the timing of nutrient applications varies among wheat production systems. Many of the soils in the Southeast are prone to leaching, so very little, if any, N is applied in the fall to winter wheat. However, in some of the states in the western part of the region and throughout much of the Great Plains, fall N applications are more common due to lower leaching potential and the desire for more fall forage production for grazing.

The variety of fertilizer sources available to be used in wheat results in several placement options. For example, anhydrous ammonia must be injected below the surface of the soil, dry sources are broadcast or banded depending on the production system, and liquid sources, such as UAN, are often applied directly over the top of the growing crop.

Following 4R nutrient stewardship can improve fertilizer effectiveness and efficiency for a wide range of wheat production practices. To learn more about how the 4Rs can be applied to wheat production, visit the IPNI website at www.ipni.net in early 2010 to view the video “The Right Way to Grow Wheat...4R Nutrient Stewardship”. If you want to simply know more about 4R nutrient stewardship, look for the video titled “The Right Way to Grow...4R Nutrient Stewardship”. It will be available on the website in early 2010.

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Abbreviations: N = nitrogen; UAN = urea ammonium nitrate.