UNITED STATES EXPERIENCE OF RESEARCH AND EXTENSION ASSOCIATED WITH IMPROVING GRANULAR FERTILISER APPLICATION ON-FARM

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Environmental concerns in conjunction sustainable agricultural production in the US are requiring farmers to better manage fertilizers. In response to the environmental and sustainable movements, the fertilizer industry is promoting the 4Rs to nutrient stewardship which encompasses using the right fertilizer source, right rate, at the right time, in the right place. This concept focuses on sound fertilizer management at the farm level while providing a platform to better educate the public and government agencies. This presentation will provide a current state of nutrient management in the US, technologies providing a means to address the 4Rs, how modern application equipment can create field performance concerns, and illustrating extension or education activities helping advance farm operations. Site-specific fertility management has expanded in the US in an effort to improve nutrient use-efficiency and to address soil fertility variability. Precision agriculture technology has shown to more accurately place and ensures the right rate applied. Technologies include GNSS-based guidance, rate control and automatic section control; all affording the ability to improve application of fertilizers while minimizing or eliminating over-application (2X or 3X rate areas). However, while research has outlined the benefits of these technologies, adoption of some has been low. Crops sensors are a prime example of how research has reported advantages for management of nitrogen in corn and wheat indicting a tool for farmers to capitalize on within their operations. Costs and inexperience using precision ag technology have created hurdles for crop sensor usage in the US. Concurrent to technology adoption, size of application equipment and in-field ground speeds have both increased in the US in order to meet required timing of nutrients. While these larger equipment provide the needed field capacity (ha/hr), issues such as product segregation and limitations of rate control systems have generated off-rate errors and uneven distribution having negative consequence to crop yields. Inefficient use and inaccurate placement becomes a concern for farmers today seeking to maintain profitability and build their site-specific management programs. Therefore, extension programming is providing engagement and education activities to ensure proper implementation of nutrient practices at the farm.

Editor's Note: An extended manuscript has not yet been submitted for this presentation.