

producer a different look at a field. After normalizing the yield data for a field for each crop year, they are combined into one yield analysis map which gives a more complete picture of the field. This map allows a producer to determine yield potential and goals for a crop, recognize problem areas, develop management zones, and analyze yields for profitability. Part of the process of using the gathered yield data to its maximum potential is its analysis. Producers must gather their data and either have it analyzed by someone else or do it themselves. Several of the farm related GIS software programs have the normalization and multiple year/crop option as part of their analysis packages. The normalization of yield data and combining of multiple years and crops allow producers to take a realistic look at a field without becoming sidetracked in the bushels per acre yield.



▶ **MASTER FARMER PRESENTATION**

Program 1MFP-2

▶ **Water Quality Monitoring of Agronomic Best Management Practices**

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Collecting agronomic data from various research trials is not only a common practice, but a top priority within the research division of the land grant university system. This information may include weed and other pest populations, plant heights, stand counts, and ultimately, yield potential. In addition, it is becoming more and more important to validate the significance of Best Management Practices (BMPs) in production agriculture and their effect on soil and water quality. BMPs, or conservation practices, are practices used by agricultural producers to control the generation and delivery of pollutants from agricultural activities to water resources. One validation method of these practices is through edge of field monitoring. Impaired Louisiana surface waters contain over 32 different types of pollutants, with many of them binding to soil particles and relocating off-site through the erosion process. Agricultural operations, in addition to contributors such as construction sites, supply various amounts of sediment and nutrients to our state's water bodies and therefore must be addressed in pollutant reduction strategies. Implementation of one or more of these Best Management Practices can result in reduced sediment leaving the fields, increased soil moisture, and increased organic matter over time.

By using various methods of sampling, runoff can be collected where a number of these conservation practices are implemented and compared to standard practices. Through statistical analysis, pollutant levels for each treatment can be determined and used to evaluate the water and soil quality, as well as production benefits, of these specific practices. With changing technologies and increased public concern over water quality issues, agricultural producers must utilize the best available technologies to minimize environmental impacts while maintaining or increasing production. Best Management Practices are one tool that can help meet that goal.

Research stations provide optimum environments for monitoring projects where inputs and management practices can be controlled. One monitoring project that was conducted at the Dean Lee Research Station in Alexandria included a wheat stubble management/soybean research trial. The study began in 2008 with cotton planted into various wheat stubble treat-

ments which included 12” stubble, burned stubble, cover crop, and conventional tillage. Rains and wind from Hurricane Gustav prevented the plot from being harvested so yield data could not be collected. The study continued in 2009 and water samples were collected throughout the growing season after each significant rainfall event. The samples were analyzed for Total Solids, Nitrates and Nitrites, Total Phosphorus, and Hydrolysable Phosphorus. Preliminary results in 2009 indicated that there were significant differences between the burned and stubble treatments for Total Solids. Of all the contaminants, sediment is the largest pollutant (by volume) in Louisiana and the nation. Many other pollutants bind to soil particles and relocate off-site through the erosion process and so it is important to monitor the concentrations leaving the the agricultural field.

Due to decreasing cotton acreage in Louisiana, the study transitioned into double cropping wheat with soybeans for the 2010 growing season. As noted in the first two years, yield was not significantly affected by any of the treatments, indicating that by implementing one or more of the BMPs, a producer will help minimize the environmental impact while sustaining productivity. Information collected from this type of research can be used in future trainings, workshops, and publications to support conservation and long-term sustainability in production agriculture.

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