

Program 12C-2

▶ **Dealing With Drought**

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A producer survey in the spring of 2011 identified “Cotton’s Tolerance to Heat and Drought” as a top concern for US cotton growers. Unfortunately this was prophetic as the months continued to deteriorate across much of the US during both 2011 and 2012. Although genetic research is underway to provide long term help, many immediate actions that growers take can impact their crops yield under extreme weather events. This session will review our current knowledge about causes of drought and production practices that minimize damage from drought.

Key to successful management during adversity is accurate information of water resources. Weather forecasts for large events continue to improve as demonstrated by the forecast accuracy of hurricane Sandy. Investments in climate research and computing power for weather models will continue to improve large event forecasts. For small scale or local events, such as midday precipitation in the Midsouth, forecast accuracy is still unreliable. Even more inaccurate is the amount of rainfall that actually reaches plant roots due to variable runoff and in-field surface-water movement. With commercial development of wireless soil moisture sensors, evaluating real time soil moisture is becoming easier to integrate into a comprehensive drought management program. Although spatially variable within a field, when soil water content is assessed at several depths over time, useful information can guide improved irrigation decisions.

Another key to successful management during adversity is precise remediation of soil resources. Root zone soil is the immediate source of water essential for crop growth. By expanding the effective root zone and improving its water infiltration/retention/release characteristics crop yields during drought can be enhanced. Examples of grower practices to improve root zones include: root pathogen, nematode, compaction, erosion and pH control; surface organic matter for infiltration and soil microbial health; and soil fertility throughout the root zone. Due to the need to address specific limitations in each field, blanket recommendations have limited utility compared with precise field by field investigation and recommendations.

Another key to successful management during drought is precise application of water resources. With the expansion of irrigation in the Midsouth and Southeast many fields have irrigation capacity that were previously solely rainfed. This poses challenges for growers as the additional layer of in-season management complexity for irrigation is added on top of an already complex in-season weed and insect management regime. New water management tools such as the Phaucet surface irrigation system help growers minimize the time required to manage their water and enhance the efficiency and uniformity of water application. A few hours invested to layout a Phaucet program before the irrigation season can save many hours of in-season frustration with non-uniform irrigation. Uniform and efficient water application is essential for optimum use of this limited resource during drought conditions.

Tools are available to help Midsouth growers deal with drought, a challenge that now occurs somewhere on an annual basis. Learning what tools are applicable for each field will focus a grower’s management time on key yield limiting factors and help access the future improvements coming from ongoing research to better deal with drought.