

# Corn Study

## Trial Seeks To Identify Fields Suitable For Rainfed Corn Production

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**P**redicting the suitability of fields for non-irrigated corn production is the object of a trial conducted by Dr. Earl Vories, agricultural engineer with USDA-ARS Cropping Systems and Water Quality Research. Vories explained the process recently.

"We're trying to identify fields that would be good candidates for corn production without irrigation," he said. "It's not a recommended practice, but with the extra need for corn because of the demand for ethanol fuels, we expect that more farmers are going to grow corn without irrigation. If it's rented ground, which a lot of farmland is, and the landlord isn't willing or isn't able to install irrigation, then you're going to be forced to produce a crop with rainfall only.

"We're studying corn right now because corn is pretty sensitive to no irrigation," he said. "If the concept works, there's no reason why it wouldn't work on soybeans, cotton or any other crop that we want to grow."

The field study was initiated at the University of Missouri Delta Research Center Marsh Farm in 2007. The goal was to study factors impacting corn yield in a rainfed production system.

The soils, like many in the region, are highly variable due to alluvial and seismic activity over the years. The soil survey shows areas of Tiptonville silt loam, Dundee sandy loam and silt loam, and Reelfoot loam and sandy loam, all within the 12-acre field used for the study.

"We're taking all the additional soil measurements we can and we're comparing them to yields obtained with a yield monitor, but the goal is to be able to find out what would happen to a corn crop without having to risk a crop failure to get the information," Vories said. If farmers have been using precision agriculture methods, information on their fields should be available already.

Rainfall was sparse in 2007, with less than four inches recorded during June and July, and almost two inches of that coming on July 1. The

sandy soils experienced significant drought stress.

"We found that information from the county soil survey alone was not sufficient to describe the yield differences observed in the field," Vories continued. "Also, the range of yield values that could be predicted from measurements of surface elevation and soil electrical conduc-



**Dr. Earl Vories, Agricultural Engineer with USDA-ARS Cropping Systems and Water Quality Research, explained the process of predicting the suitability of fields for non-irrigated corn.** Photo by John LaRose, Jr.

tivity was not sufficient to adequately describe the observed yields. The study continued into 2008 with similar rainfall patterns. Those results, along with additional soil measurements, are still being analyzed to find the best indicators of yield.

"If we are successful, then a farmer can use our methods to help identify if the field is a good candidate for rainfed production or should not be used," he said. "We don't recommend producing corn without irrigation, but this kind of information could be useful to producers as they make their decisions about which crops to plant on which fields." △