ble crop cotton in the seven years of the current study were found to be no greater than with monocrop cotton because these were irrigated studies. The four tropical storms that did arrive were in late August and early September but only Hurricane Gustav in 2008 caused severe crop damage.

The wheat-cotton doublecrop systems studied in the LSU AgCenter are highly productive and have potential to improve soil and water quality and therefore qualify as BMPs. These studies were conducted with no till, a viable economic practice because of the associated savings in fuel, equipment and labor costs.

▸ Double Cropped Cotton After Wheat Response To N Rates

Presented by Dr. Normie Buehring
Agronomist, Mississippi State University

A 2008 study was conducted at the North Mississippi Research and Extension Center to evaluate cotton growth and yield response to N rates in a double cropping system following wheat on a Leeper silty clay loam soil. Mono-crop cotton planted in mid-May (5/20/08) and mono-crop cotton planted in early June (6/05/08) with the 90 lb N/ac were standards for comparison to double-crop cotton planted no-till into 8 to 12-inch wheat stubble on 38-inch beds in early June. Cotton cultivar Phytogen PHY 375 WRF was used with a seeding rate of 58,000 seed/ac. A colter-knife system was used to apply the liquid nitrogen (32%N as UAN) approximately 8 inches from the row and 2 to 3 inches deep. The mono-crop cotton planted mid-May was side-dressed at 90 lb N/ac on 6/16/08. Side-dress N rates of 0, 30, 60 and 90 lb N/ac were applied 6/24/08 to early June planted cotton in wheat stubble. Good agronomic practices were applied to the whole study. The May planted cotton was defoliated 9/25/08 and harvested 10/01/08. The double-crop and mono-crop cotton planted in early June was defoliated with Prep + Folex on 10/22/08 with a repeated application on 10/30/08 and a 11/06/08 harvest date.

The study wheat yield average was 67 bu/ac. Rainfall during the cotton growing season was 10 and 62% of normal for June and July, respectively, and 179 and 133% of normal for August and September, respectively. Observation notes indicated that the May planted mono-crop cotton first flower date was 7/09/08 with a 7/29/08 first flower date for the June planted mono-crop cotton, and an 8/01/08 first flower date for the June cotton planted in wheat stubble. The N rates (30, 60 and 90 lb N/ac) showed no difference in total harvestable bolls/plant and plant height, but all treatments had more harvestable bolls than the 0 lb N/ac check treatment; and were taller at maturity than both May planted mono-crop cotton and the early June planted cotton in wheat stubble 0 lb N/ac check treatment. The stubble height or stubble residue environment increased the first fruiting branch node location. The first fruiting branch node for the mono-crop cotton 5/20/08 and 6/05/08 plantings was node 6 with node 7 for the cotton planted in wheat stubble with all N rates. Wheat stubble had an impact on cotton maturity. The cotton in the wheat stubble percent open bolls at defoliation (10/22/08) ranged from 29 to 37% and was lower than the 58% open for mono-crop cotton with the same planting date.

The lint yield results indicated that mono-crop cotton planted in either mid-May or early June had similar yields with 1223 lb lint/ac for May planted and 1279 lb lint/ac for June planted. These yields were approximately twice the 0 N lb/ac check treatment and approximately 36% higher than cotton planted in wheat stubble with the same N rate and planting date. The 60 lb N/ac treatment had the highest yield response to nitrogen with 896 lb lint/ac but was not different from 30 and 90 lb N/ac. The 0 lb N/ac check had the lowest yield of 638 lb lint/ac. These preliminary results indicated no-till cotton with 60 lb N/ac can be grown successfully following a wheat crop in a non-irrigated environment. The 60 lb N/ac is adequate nitrogen for double-crop cotton following wheat. The first fruiting branch node was one node higher for cotton planted in wheat stubble than mono-crop cotton. Wheat stubble compared to mono-crop cotton had little effect on cotton first flower date. However, cotton planted in the wheat stubble environment had 36% lower yield than mono-crop cotton with the same planting date and mono-crop cotton planted mid-May.

▸ Cotton/Corn Rotations: Yield Response Variations And Factors That Influence Them

Presented by Dr. M. Wayne Ebelhar
Research Professor and Agronomist, Mississippi State University

Multi-year research was initiated in the Mississippi Delta at the Delta Research and Extension Center (DREC, Bosket very fine sandy loam [Mollic Hapludalf]) and at the Tribbett Satellite Farm (TSF, Forestdale/Dundee silty clay loam [Typic Ochraqualfs/Aeric Ochraqualfs]) in 2000 to examine the interaction of nitrogen (N) rates and potassium (K) rates in cotton/corn rotation systems. The studies were designed to examine both the benefits and problems associated with corn/cotton rotations on different soil types. Changes in farm legislation has allowed producers the flexibility to shift from continuous mono-crop cotton production to alternative crops and cropping sequences to replace some of their traditional cotton acres while using rotation to improve soil productivity and yield. As cotton acres decrease and both corn and soybean acres increase, the benefits from rotation may become even more evident. The objectives of these studies included a) determining the effects of N and K nutrition on cotton lint yields and corn grain yields, and b) determining rotational effects of corn on cotton production and the implications of these rotations on whole farm economics. Research areas were established on each research that could be rotated over a 3-year period with one year planted to corn and the two subsequent years planted to cotton. Each of the three sections had a factorial arrangement of N and K rates. The corn and cotton sections consisted of 4-row (40-in spacing) plots, 90 to 100 feet in length, with either four (TSF) or five (DREC) replications. Nitrogen rates were 60, 90, 120, 150, and 180 lb N/acre for cotton and 120, 160, 200, 240, and 280 lb N/acre for corn with the fertilizer N applied as urea-ammonium nitrate solution (32% N). Potassium rates for all rotations were 0, 40, 80, and 120 lb K/acre applied as 0-0-16 (1.3 lb K/gal). Nitrogen was applied at a uniform rate (60 lb N/acre for cotton, 120 lb N/acre for corn) prior to or near planting with the various N rates determined at the time of sidedress N application. Potassium was applied at the same time as the sidedress N with the same equipment. High yield potential corn and cotton cultivars were planted at each location and maintained throughout the growing season. Soil moisture sensors were used to measure soil water and the data used to initiate, schedule, and terminate irrigations for both corn and cotton whenever possible. Crops were harvested by use of commercial harvesters modified for plot harvest with grab-samples taken for laboratory analyses and ginning. Seedcotton grab samples taken at harvest were ginned through a 10-saw micro-gin for calculation of lint percent. Data were summarized and statistically analyzed using SAS (Statistical Analysis Systems) with mean separations by Waller Duncan K-ratio t-tests and Fisher=s Protected Least Significant Difference (LSD).

Main effects means across N rates and K rates were used to evaluate the benefits from corn in the production systems since there was no significant N rate by K rate interaction. Comparisons were made of cotton following cotton and cotton following corn and used to measure the actual benefits from corn in the system. Both corn and cotton have shown significant responses to increasing N rates in most years while neither has shown significant increases with increasing K rates in the presence of adequate K levels. The response to rotation has been variable with differences ranging from an -14.1% to +51.7% at the DREC location. Total lint yield has averaged 889 lb/A/yr where cotton followed cotton and 988 lb/A/yr where cotton followed corn. This translates to an 11.1% increase (98 lb/A/yr) where cotton followed corn in rotation. The TSF location has seven years of data