

Double Cropped Cotton After Wheat Response To N Rates

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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 Phyto-gen 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. Δ