Arkansas Corn and Grain Sorghum Promotion Board
Research Summary for 2005

Project Title: Ultra-Short Season Corn Hybrid Evaluation

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Crop: Corn

Status: Year 1 Report

The objectives of our research are to: (1) evaluate a number of ultra-short season corn hybrids at multiple sites in Arkansas for yield and consistency, and (2) promote interest among commercial seed companies for developing short-season corn hybrids specifically for the Midsouthern U.S. To meet these objectives, experiments using corn hybrids with a wide range of maturites (79 to 119 days relative maturity) were planted at Rohwer, Stuttgart, and Keiser. Unfortunately planting equipment malfunctioned at Stuttgart, and no useable data were obtained.

We divided the hybrids into four maturity classes (MC) based upon the relative maturities given by the seed companies: MC I had relative maturities from 79 to 85 days, MC II had relative maturities from 87 to 95 days, MC III had relative maturities from 96 to 105 days, and MC IV had relative maturities from 106 to 119 days. There were a total of 39 hybrids evaluated at Fayetteville and 24 hybrids evaluated at Rohwer. For maturity groups I through III, seeded population was 45,000 kernels per acre, and for MC IV, seeded population was 45,000 kernels per acre. At Fayetteville there were four 20-inch rows per plot, and at Rohwer, there were five 19-inch rows per plot. Irrigation was applied as needed at both locations by overhead sprinklers. All treatment combinations were replicated four times. At both locations, 100 pounds of N was applied at planting and an additional 100 pounds was applied at the six-leaf stage.

An additional experiment was conducted at Fayetteville to evaluate the response to population density for hybrids of different maturity. Crop management was similar to that described in the previous paragraph with the exception that a wide range of plant populations were evaluated. Hybrids with relative maturities of 80, 85, 98, 106, and 119 days were planted at seeding rates of 8, 16, 32, 80, and 121 thousand kernels per acre. All treatment combinations (hybrid x population) were replicated four times.

For both Fayetteville and Rohwer, yields tended to be lowest for MC I (79 to 85 days relative maturity), but for both locations MC III (96 to 105 days relative maturity) had the highest yields (see figures on next page). At Fayetteville, the highest yields for a hybrid within a MC were: 146 bu/ac (MC I), 167 bu/ac (MC II), 205 bu/ac (MC III), and 185 bu/ac (MC IV). At Rohwer, the highest yields for a hybrid within a MC were: 165 bu/ac (MC I), 202 bu/ac (MC II), 266 bu/ac (MC III), and 207 bu/ac (MC IV).

The second experiment at Fayetteville evaluating yield response to plant population indicated that optimum plant populations (in thousands of plants per acre) were: 69 (80 day RM), 65 (85 day RM), 57 (98 day RM), 51 (106 day RM), and 44 (119 day RM).

Additional analysis of these data will include economic trade offs for yield, seed costs, and irrigation. Our plans for 2006 include having experiments at Rohwer, Fayetteville, and Keiser and having approximately 40 hybrids at all locations.

Figure 1 Yield of corn hybrids at Fayetteville 2006 for maturity classes (MC) I (79 to 85 days), MC II (86 to 95 days), MC III (96 to 105 days), and MC IV (106 to 119 days).

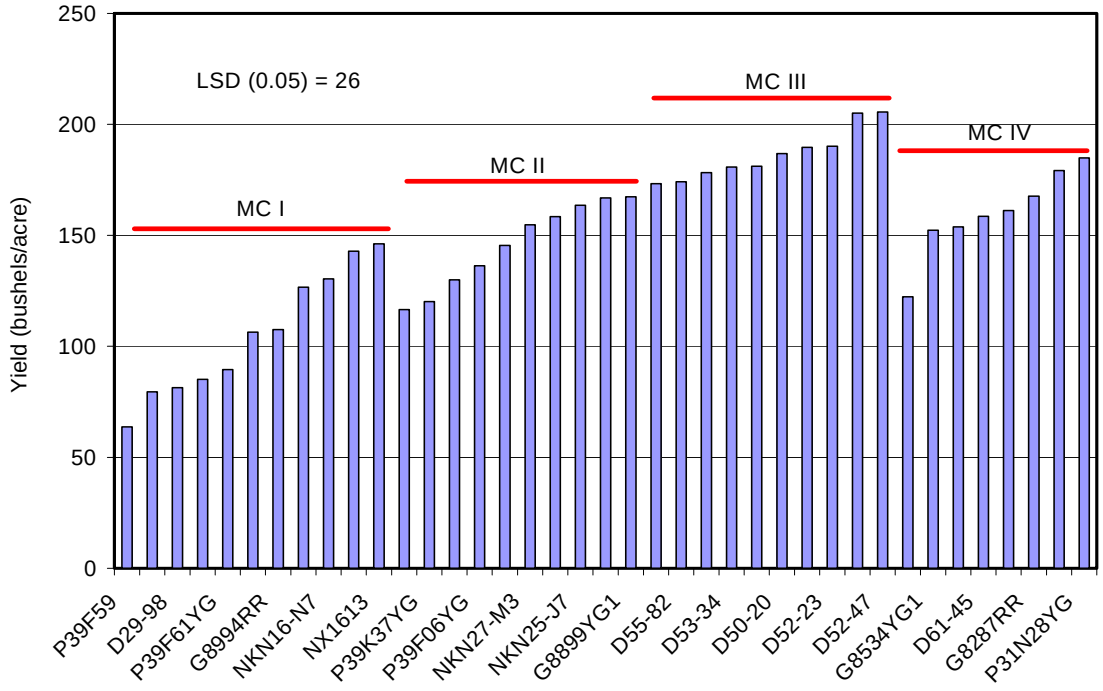

Figure 2 Yield of corn hybrids at Rohwer 2006 for maturity classes (MC) I (79 to 85 days), MC II (86 to 95 days), MC III (96 to 105 days), and MC IV (106 to 119 days).