Comparing Single-Row, Twin-Row Configurations for Louisiana Crop Production

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[Image: Table 1]

[Image: table 2]

The use of the twin-drill (twin-row) configuration on 36- to 40-inch-wide beds is of interest to Midsouth producers, but as yet it is unproven as a yield enhancement practice for most agronomic crops. The feasibility of this production system has increased with the advent of planters that have the capability of planting twin rows 7.5 to 10 inches apart. A common practice is to center twin rows 9.5 inches apart on 40-inch-wide beds, with 30.5-inch spacing between adjacent beds. For cotton production, however, closer row spacing of 7.5 to 8 inches is needed for picker efficiency. With twin rows, growers can reduce row spacing and, at the same time, have the advantages of raised beds, permitting the use of furrow irrigation. Another advantage is that harvesting equipment – such as corn headers and cotton pickers – does not have to be replaced or modified for this planting system.

Field experiments were conducted from 2004 to 2007 at the Northeast Research Station near St. Joseph, the Macon Ridge Research Station near Winnsboro, and Dean Lee Research Station near Alexandria to evaluate, single- versus twin-row configurations. Details of the experiments are presented in Table 1. This report focuses on the comparison of single and twin rows. In corn trials at the Northeast station, yields for the row configuration treatments were averaged across other variables of seeding and nitrogen rate treatments. The corn hybrid Dekalb DKC697, which was planted the first year, has similar genetics to Dekalb DKC69-71, except DKC69-71 has herbicide- and insect-resistant traits (Table 1) Multiple varieties of cotton were evaluated at the Macon Ridge station and soybeans were evaluated at the Dean Lee station and the Northeast station.

Single rows were planted with conventional vacuum-type planters and twin rows were planted with a Monosem planter. Spacing on the twin rows ranged from 9 to 9.5 inches. Recommended LSU AgCenter cultural practices for commercial production were followed for all trials, and in each trial equivalent seeding rates were used to compare single and twin rows, except for the soybean trial at the Northeast station (experiment 4). In experiment 4, average plant populations were 86.000 plants per acre for single rows and 139,000 plants per acre for twin rows.

Corn yield was significantly higher for the twin-row production system in only one of the three experiments (Table 2). When averaged across the three corn trials, grain yield differences were very small – 145.2 bushels per acre for single-row and 148.7 bushels per acre for twin-row treatments. Recent research in Mississippi found a larger yield benefit from the use of twin rows. In those studies, yields were extremely high (250 to 300 bushels per acre), and the most consistent responses occurred in hybrids with fixed or determinate ear type. Fixed-ear hybrids generally are expected to respond to varying plant and row spacing more than "flex" or indeterminate ear types.

Soybean yields increased in twin row plantings in two of three trials (Table 2). Soybean yields were 12.6 and 13.1 percent higher in twin-row tests compared with single-row tests in experiments 5 and 6. Planting in twin rows, however, did not increase the yield of any of the four Group IV varieties in experiment 4. Soybean varieties vary from year to year, and some varieties may respond differently than others to row configurations.

Cotton's response to twin rows was evaluated in experiments 7 and 8 (Table 2). There were no differences in yield between row spacing in either of the two experiments. Cotton plants have great capacity to compensate for available space. A large body of research in Louisiana and elsewhere has found that yields are usually similar across a wide range of plant and row spacing, so these results are consistent with previous findings. Twin-row cotton requires spacing of 7.5 to 8 inches because of harvester constraints.

The yield response to single-row vs. twin-row planting was inconsistent across crops and years at all three locations. Soybeans had the largest response to twin rows, with significant yield increases in two of three experiments. Corn had a small-but-significant yield increase in one of three experiments. Cotton yielded the same in single- and twin-row configurations. As a result of crop prices, corn and soybean rotations will probably become more common in future years. These

crops, along with grain sorghum, may be adaptable to the twin-row configuration. Additional research is being done to evaluate fixed-ear corn hybrids that may be more responsive to twin rows. Research also is needed to further define soybean cultural practices that enhance yield and profitability.

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