



Response of Deltapine® Cotton Varieties to Population and Row Configuration

Some cotton growers are interested in switching from planting in 38-inch solid rows to 30-inch, 2:1 skip rows. This planting system would allow the use of the same 30-inch planter for cotton, corn, soybeans, and other row crops. This trial was developed to answer grower questions about proper plant populations and variety selection for skip-row cotton planting, and whether or not skip-row cotton will produce yields similar to solid row plantings.

Materials and Methods

A demonstration trial was conducted in 2013 at the Monsanto Learning Center at Scott, MS, to show the impacts and interaction of population by variety in 2:1 skip-row and 38-inch solid cotton plantings. Four cotton varieties were planted at four different populations. The products were DP 1133 B2RF, DP 1219 B2RF, DP 1311 B2RF, and DP 1321 B2RF. Seeding rates were 13,600; 27,200; 40,800; and 54,400 seeds/acre.

Cotton was planted on May 13, 2013 and harvested on October 29, 2013. Agronomic management was similar to local standards, including conventional tillage, weed management, insect management, and irrigation as needed. Plant growth regulator (PGR) applications (4.2% mepiquat chloride; 0.35 lb active ingredient per gallon) were lower in the skip-row cotton than would normally be applied in solid-row cotton. The first PGR application of 12 fl oz/acre was made on July 2, 2013 to only the 38-inch solid rows. The second PGR application of 16 fl oz/acre was made on July 20, 2013 to 38-inch solid rows, and the first application of 10 fl oz/acre to 2:1 skip rows was also made on July 20, 2013. The final PGR applications were made on August 1, 2013 with 20 fl oz/acre applied to 38-inch solid rows and 12 fl oz/acre applied to 2:1 skip rows.

Results

Some growers believe they may save money on seed and technology fees by planting skip-row cotton. This trial, across all cotton products, showed that plant populations per field acre (not acre of row feet) needs to be in the same range as solid planted cotton. The seed that would have been planted in the skipped rows should be planted in the remaining rows to achieve an acceptable plant population for optimum yield potential. This results in the same seed cost per acre, with plants closer together down each row.

Overall the highest yields were reported in 38-inch solid row configuration (Figures 1 and 2). DP 1321 B2RF produced the highest yield in the trial (2,512 lbs/acre) at

54,400 seeds/acre, and the second highest yield of 2,258 lbs/acre at 40,800 seeds/acre (Figure 3). DP 1219 B2RF also produced high yields with 2,103 lbs/acre at 54,400 seeds/acre in 38-inch solid rows. When evaluating only 2:1 skip rows DP 1321 B2RF and DP 1133 B2RF at the highest planting population (54,400 seeds/acre) had the highest yields with 1,932 lbs/acre and 1,920 lbs/acre, respectively.

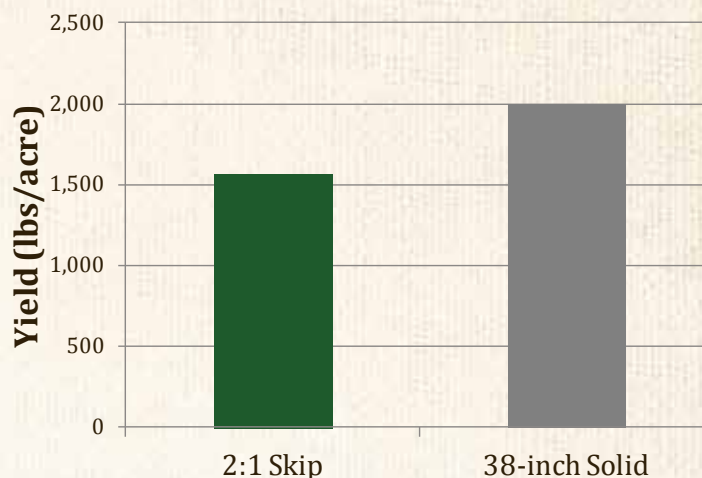


Figure 1. The yield response of cotton when averaged across varieties and planting populations.

Summary Comments

In 2013, the 38-inch solid rows outperformed the 30-inch 2:1 skip rows for all four cotton varieties (Figures 1 and 2). The 2013 growing season provided crops with bright clear sunshine and cool nighttime temperatures, which all helped to produce record cotton yields. Fruit retention was exceptionally high with no major fruit shed events. These ideal weather conditions were optimal for the 38-inch solid-row spacing as cotton plants are positioned for maximum sunlight, water, and nutrient interception.

Yields reported for the 30-inch 2:1 skip-row spacing were reduced in comparison to the 38-inch solid rows. However, the yields were still high and appeared to respond similarly to the different planting populations



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in the trial for both the 38-inch solid row and 30-inch 2:1 skip row configurations, with the higher planting populations producing higher final yield (Figure 3).

Similar yields can be expected from either 38-inch solid rows or 30-inch 2:1 skip rows, as long as management decisions are made to optimize conditions for that row configuration: uniform seed spacing/ placement, adequate bed preparation, and clear middles to allow irrigation and drainage.^{1,2} When selecting cotton varieties for skip row configurations consider using more indeterminate cotton products that produce more vegetative growth and spread and fill in the “skip” area.

Tips for 2:1 Skip Row Configurations

- Skip-row planting may allow for better light penetration before canopy closure.
- Skip-row planting may provide some level of moisture conservation advantage over solid row cotton.
- By adopting 2:1 skip-row spacing, seed and technology costs will not be saved as most or all of the seed that would have been planted in the skipped row should be evenly distributed in the planted rows.
- Carefully read planter manuals to determine settings to achieve the desired population per acre of land, not per planted acre.
- Since cotton plants will eventually fill the skipped row, all over-the-top applications from mid-to-late-season, should be calculated as if the cotton were planted in solid rows.
- Particular care should be taken to keep the skipped row weed free until canopy closure.

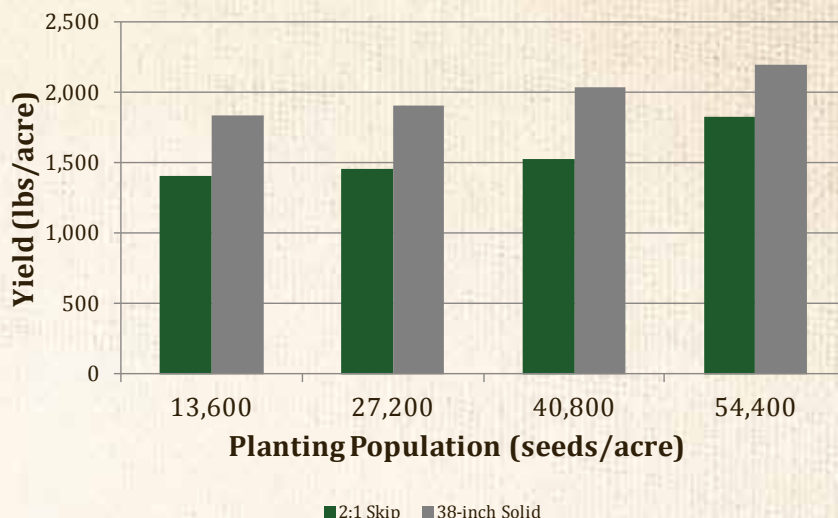


Figure 2. The yield response of cotton varieties by row planting population when averaged across cotton varieties.

All of the decisions going into planning any cotton production system are highly variable and production practice specific including the variety planted, population, and in-season management of inputs. Introduction of 2:1 skip row systems can be successfully used for cotton production in the Southern United States. The use of 30-inch skip-row configurations in cotton would allow growers to mainstream the use of their planter for grains and cotton, and keep cotton viable in a production plan.

Sources and Legal

¹Cotton Variety by Populations: Response in 2:1 Skip-Row Planting. Monsanto Learning Center Summary at Scott, MS. 2012. ²Two-in-One Skip Row Cotton Evaluations. Monsanto Learning Center Summary at Scott, MS. 2011.

The information discussed in this report is from a single site, non-replicated, multiple-year demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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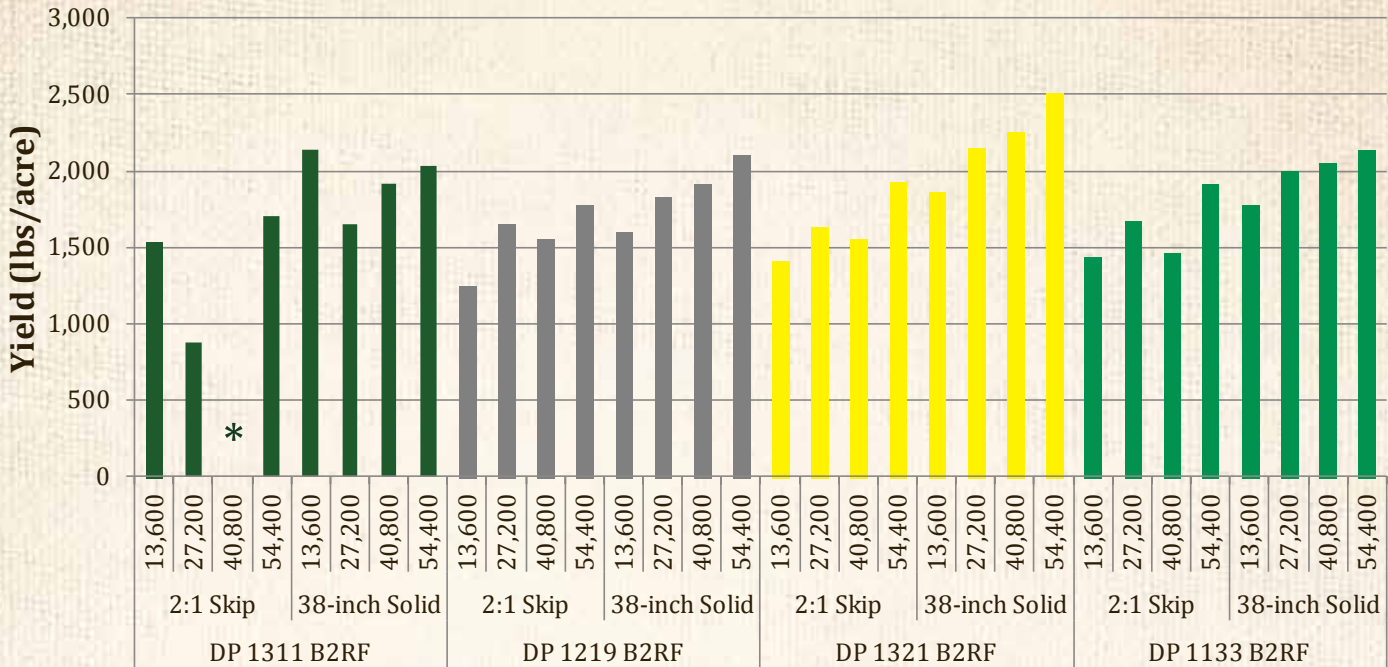


Figure 3. The yield response of cotton varieties by row configuration and planting populations. *Data was not collected for DP 1311 B2RF at 40.800 seeds/acre in 2:1 skip rows.

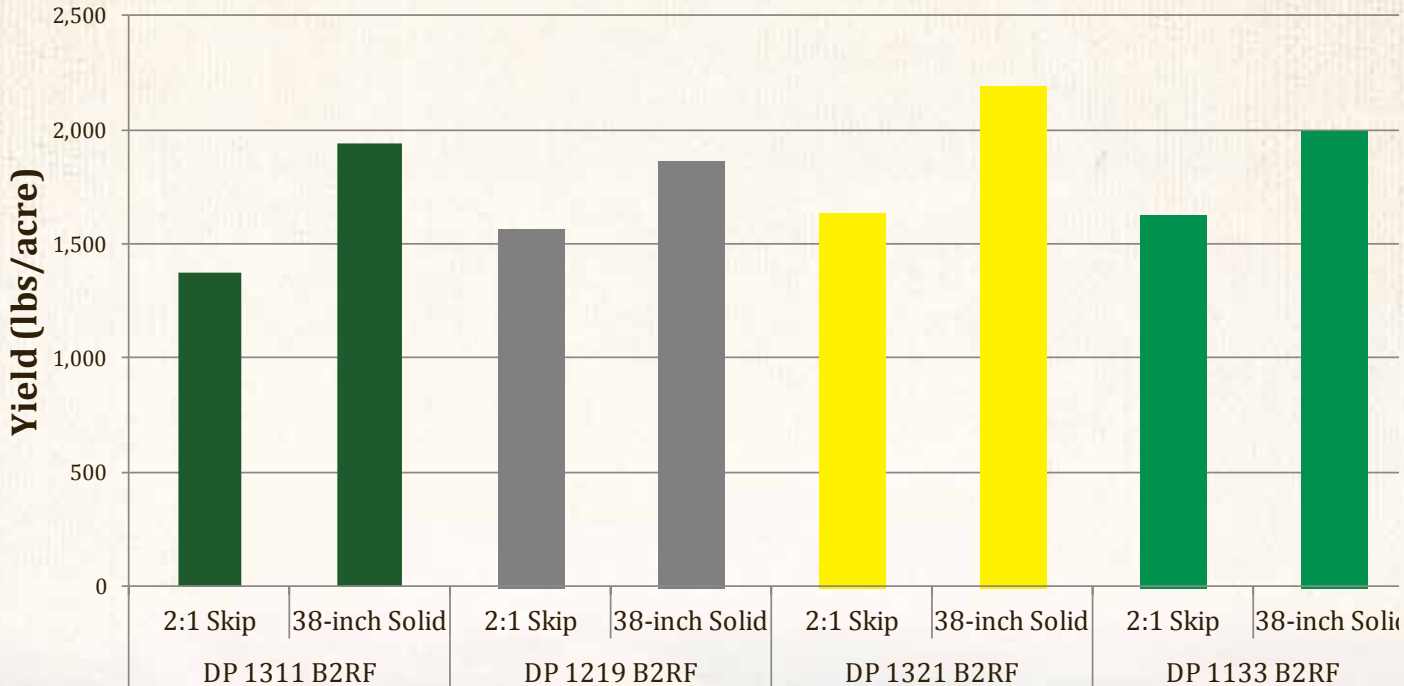


Figure 4. The yield response of cotton varieties by row configuration when averaged across planting populations.