

**SELECTION OF AN ASIATIC COTTON
(*GOSSYPIUM ARBOREUM*) SUITABLE FOR US
PRODUCTION**

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Abstract

The fibers of Asiatic cottons are used in padding because of their resiliency and in other non-woven applications requiring high absorbency such as disposable diapers and feminine products. The fiber walls are very thick and, although fiber length is usually less than an inch, the micronaire can exceed 8.0. It is the high cellulose content of the fibers that make them resilient to pressure and highly absorbent. The former trait may make them suitable for carpeting, also. Currently no Asiatic cotton is produced in the USA and all used commercially is imported.

In response to interest by a segment of the industry in having a domestic source for this type of fiber, and I initiated a program to identify and develop Asiatic lines with yield and agronomic characteristics suitable for the economic production of this type of cotton in the USA. Criteria considered essential were 1) micronaire 7.0 or higher, 2) yield potential comparable with upland cotton, 3) crop management requirements similar to upland cotton or easier, 4) locs remain in the burr after opening, 5) amenable to mechanical harvesting, and 6) easily ginnable on commercial gin stands. Initially 75 genotypes of *G. arboreum* were selected based on having micronaires of 7.0+ in previous evaluations. For the initial assessment these were grown at Rohwer (SE Arkansas) in a single 45' row each spaced 38" apart. Management was the same as adjacent upland cotton plots including irrigation, however additional PIX was applied to control plant height. All genotypes defoliated well, but loc retention in the pendant bolls characteristic of Asiatic cotton was highly variable among lines. Two 5' sections were hand-harvested from each row with only cotton remaining on the plant being harvested.

The top line yielded about 1500 lbs of lint per acre. Nine lines were selected based on over-all plant structure and on yield (retained on the plant) exceeding 1000 lbs./ac. These were grown the following year at Rohwer in replicated 4-row plots with the same management regime as before. Selections of superior plants were made within each line. A spindle picker was used for total harvest, however, the results clearly demonstrated that Asiatic cotton cannot be mechanically harvested with a picker. Accurate yield data could not be

obtained because of the highly inefficient harvest method. The harvested seedcotton was ginned at the USDA Ginning Laboratory at Stoneville, MS to evaluate potential problems with ginning on commercial gin stands. No problems were noted.

Since accurate determination of yield was not obtained with the picker, four of the nine lines were selected based on visual assessment of earliness and yield. These lines were grown in 1998 in northeast Arkansas where stripper equipment was available. The plots were approximately 2 acres for each line with conventional row spacing and no irrigation. The crop was planted late and subsequently experienced stress from an extended period of cool-wet conditions, followed by excessively hot and dry weather. Earliness was the major parameter explaining yield difference among the four lines. A stripper was used for harvest, and the seedcotton was ginned on a commercial gin stand. The Asiatic lines could be stripped efficiently and no problems were encountered at the gin. The line with the highest seedcotton yield had low gin turnout whereas the line second in seedcotton yield (A-120W) had about 40% gin turnout and the highest lint yield per acre.

In 1999 A-120W was grown in a 10-acre production field under ultra-narrow, dry-land conditions near Belzoni, MS. The last rain occurred mid to late June. At maturity the crop was prepared for harvest with a defoliant plus desiccant and stripped. In retrospect, the desiccant was probably detrimental because the peduncle of Asiatic cotton is thinner than upland with the result that a higher than normal amount of cotton was knocked to the ground by the stripper. The harvest was ginned on a commercial gin stand and yielded 288 lbs/ac of lint. The yield from upland cotton fields on the same farm under the same cultivation conditions ranged from 250 lbs to over 880 lbs depending on chance rain after July 1. Thus, the Asiatic line was near the lower end, but not the lowest in yield under this production system. A small plot of A-120W grown with conventional spacing approximately 5 miles from the UNR field yielded 531 lb/ac compared to 716 for adjacent DP 428B. This area had a mid-July rain.

The stripper harvested cotton was ginned commercial and cleaned easily and well. Micronaire values ranged between 7.0 and 7.7 for the bales. The manufacturer to whom the cotton was contracted was very pleased with the fiber and the ease with which it could be processed. An agreement has been established between the manufacturer and producer for 100 acres production in 2000.