PLANTING --- Precision Planting

Precision Planting--Planting to Final Stand

(M. D. Cannon & H. E. Larson)

The Experiment Station and the Agricultural Extension Service have cooperated in a number of stand establishment demonstrations. These tests have been in a number of areas throughout the state. They have shown that cotton can be planted to final stand, which will eliminate the need for hand or mechanical thinning. There is also a possibility of reducing cost by saving seed, fungicides, and systemic insecticides. In all cases the cotton was planted with university equipment at approximately 12 pounds per acre. Various planting patterns were used and included drill planting and three hilldrop patterns. The three hilldrop patterns were two seeds at 6.3 inch spacing, three seeds at 9.6 spacing and four seeds at 12.6 inch spacing. Wherever possible, final stands were checked against the grower's planting. In all cases the final stand was checked by counting a measured portion of a number of rows to determine an average stand count.

In 1963, there were four field demonstrations plus work on the Cotton Research Center. The demonstrations were at the George Murdock and Bill Thacker farms in Yuma County and the Lewis Johnson and Buster Brown farms in Pinal County. This program was increased in 1964 to include 9 field demonstrations plus continuing work at the Cotton Research Center. Some of the 1964 tests were combined with tests of fungicides and herbicides. The following data includes only the 1964 tests. They are listed as to date of planting.

John Smith, Jr. Farm, Yuma County

A test was placed on the John Smith, Jr. farm near Somerton. This test included two planting patterns plus pre-plant herbicide application and two fungicide treatments. It was planted in dry soil on March 23, and was watered up about April 1. The stand count was made on May 20. Stands were spotty, due to uneven wetting in the seed zone. More accurate depth control and more compaction over the seed may be needed in this type soil. Additional emergence was observed with later irrigations.

Results: Plants per acre, hilldrop 26,350 plants, approximately 50% emergence; drill, 21,800 plants per acre, approximately 40% emergence; John Smith planting, 55,200 plants per acre. It was observed that there was some, but not adequate weed control from the herbicides. There was little or no response from the fungicides.

Bob Woodhouse Farm, Yuma County

The second planting was on the Bob Woodhouse farm near Roll. It was planted on March 24, and the stand was checked on April 24. This test included a precision planting fungicide combination. However, there was little or no response from the fungicide.

Results: Hilldrop, 3 seeds at 9.4 inches, 36,800 plants per acre, approximately 74% germination. Drill planting, 25,100 plants per acre, approximately 50% germination.
Jim Wilson Farm, Maricopa County

The third planting was at the Jim Wilson farm near Scottsdale. This field was planted on April 6, and the stand count was made on May 12. This test included four planting patterns. There was slightly better emergence where there were three or four seeds dropped per hill.

Results: Two seeds at 6.3 inches, 36,100 plants per acre, approximately 69% emergence. Three seeds at 9.4 inches, 39,700 plants per acre, approximately 76% emergence. Four seeds at 12.6 inches, 41,200 plants per acre, approximately 79% emergence. Drill planting, 38,700 plants per acre, approximately 73% emergence. The Wilson planting, 69,000 plants per acre.

Ben Simons Farm, Yuma County

A fourth planting was made on the Ben Simons farm near Parker. This field was planted on April 7, and the stand was checked on May 11. The test included two hilldrop and one drill planting. The entire field was precision planted. Therefore it was impossible to check this against the farmer's planting. This test included a fungicide treatment. However, there was little if any results from the fungicide.

Results: Drill planting, 24,100 plants per acre, approximately 47% emergence. Three seeds at 9.4 inches, 29,850 plants per acre, 57% emergence. Four seeds at 12.6 inches, 27,200 plants per acre, 54% emergence.

Tom Glover Farm, Pima County

The fifth planting was on the Tom Glover farm near Marana. It was planted on April 15 and included two hilldrop patterns. This entire field, including the Glover planting, was replanted about April 30. Therefore there are no results to report from this test. Failure to obtain any emergence was probably caused by cool weather, drying and a systemic insecticide that was used.

U of A Marana Farm, Pima County

Planting was made at The University of Arizona Marana farm on April 5. The stand count was made on May 14. This test also included a test of granular fungicides along with two hilldrop patterns.

Results: There was an emergence of 46 to 59%. There appeared to be little or no difference between the two hilldrop patterns. There was more difference between the fungicide treatments but these were not statistically important.

Ray Gibson Farm, Pima County

Three plantings were made on the Ray Gibson farm near Tucson on April 16 and were checked on May 14. In all three locations, there were two hilldrop patterns compared with the Gibson planting. Stands were spotty. However, the best emergence was with three seeds at a spacing of 9.4 inches.

Results: Ina Road planting, 3 seeds at 9.4 inches, 28,400 plants per acre, approximately 57% emergence. Two seeds at 6.3 inches, 25,900 plants per acre, approximately 52% emergence. Gibson planting, 38,100 plants per acre. City Farm
planting, three seeds at 9.4 inches, 20,400 plants per acre, approximately 43% emergence. Two seeds at 6.3 inches, 21,500 plants per acre, approximately 41% emergence. Gibson planting, 39,100 plants per acre. Sewer Farm, three seeds at 9.4 inches, 22,500 plants per acre, approximately 45% emergence. Two seeds at 6.3 inches, 19,000 plants per acre, approximately 38% emergence. Gibson planting, 31,700 plants per acre.

U of A Safford Experiment Station Farm, Graham County

The last planting for the year was at the University of Arizona Safford Experiment Station on May 6. A stand count was made on June 15. This test included four planting patterns.

Results: Two seeds at 6.3 inches, 23,200 plants per acre, approximately 44% emergence. Three seeds at 9.4 inches, 22,800 plants per acre, approximately 43% emergence. Four seeds at 12.6 inches, 24,500 plants per acre, approximately 47% emergence. Drill planting, 23,200 plants per acre, approximately 44% emergence. Experiment Station planting, 59,800 plants per acre.

Yield results from these plantings are as follows:

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<thead>
<tr>
<th></th>
<th>Drill</th>
<th>2 @ 6.3&quot;</th>
<th>3 @ 9.4&quot;</th>
<th>4 @ 12.6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean percent of Best Yield</td>
<td>89%</td>
<td>94%</td>
<td>100%</td>
<td>97%</td>
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The best yield from the 9.4" spacing was approximately 2.2 bales of short staple cotton per acre which is 11% better than the drill planting.

Random Check

In addition to the demonstration plots, a random check was made of some commercial plantings with precision planters. The results are as follows: Precision hill dropped, 27,000 to 43,000 plants per acre. Farmers' plantings, 50,000 to 100,000 plants per acre. These planting rates can be compared to a hand-thinned plot which was checked and found to have 21,500 plants per acre.