

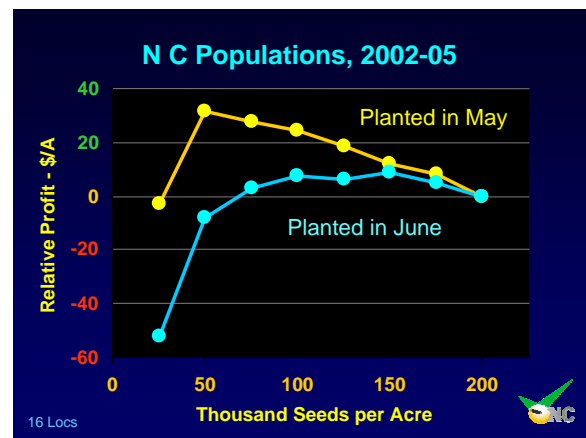
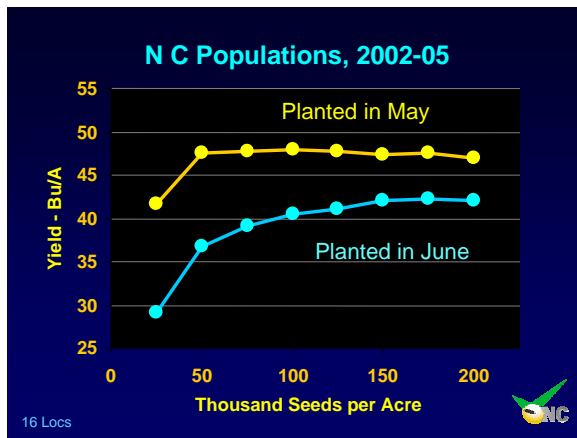
TITLE: Low Populations for Roundup-Ready Soybeans

LEADER(S): E. J. Dunphy , R. W. Heiniger, and J. F. Spears

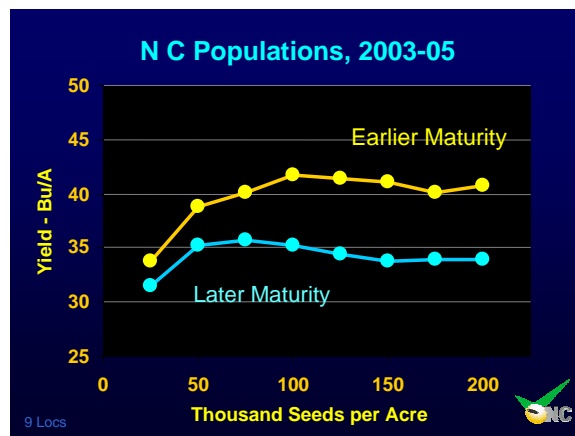
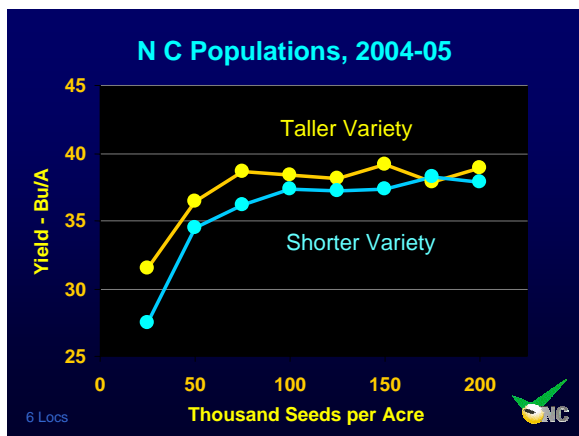
REPORT: In 2005, replicated field tests were established in twelve (12) counties to compare yield, seed costs, and relative profitability of eight (8) planting rates ranging from 25,000 to 200,000 seeds per acre. Final stands, canopy height, and lodging scores have also been collected. One Roundup-Ready variety was planted on two dates in Hyde (and Beaufort, Tyrrell and Washington), Northhampton, and Pasquotank (and Camden, Chowan, Currituck, Gates and Perquimans) counties.

Averaged over the 16 sites over the past four years that this comparison between planting dates has been made, the yields for the highest 7 populations (50,000 through 200,000 seeds per acre) were essentially all the same (between 46.9 and 47.9 Bu/A) when planted in May. The lowest population of 25,000 seeds per acre (resulting in 24,000 plants per acre) yielded 41/6 Bu/A. When planted in June, yields were either 42.1 or 42.4 Bu/A for planting rates of 150,000 through 200,000 seeds per acre, and gradually decreased to 36.8 Bu/A at 50,000 seeds per acre. 25,000 seeds per acre only yielded 29.2 Bu/A (see graph on left below).

The economics of these yields and planting rates is shown on the right graph below. All the May-planted populations were more profitable than 200,000 seeds per acre except the 25,000 seeds per acre, and it was only \$3.07 per acre less profitable. 50,000 seeds per acre (46,500 plants per acre) were \$31.35 per acre more profitable. With June planting dates, the savings in seed cost was mostly offset by the decrease in yield, so that the highest 6 populations were all within \$8.51 of each other in relative profit. 50,000 seeds per acre were \$7.77 per acre less profitable, and 25,000 seeds per acre were \$52.51 per acre less profitable.

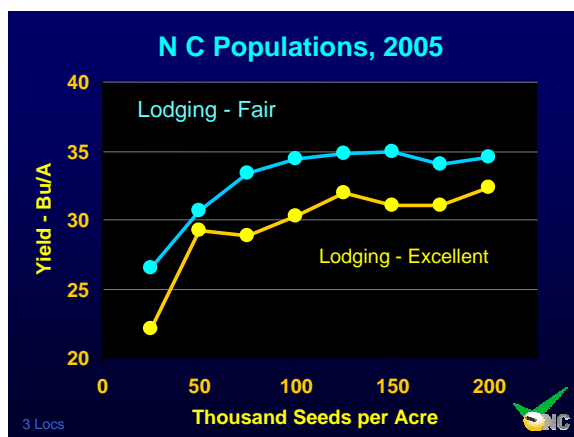


Two Roundup-Ready varieties differing in canopy height (tall versus short) were used in Catawba, Gates, and Johnston counties. Two Roundup-Ready varieties differing in relative maturity (early versus late) were used in Forsyth, Vance, and Wilson counties.



Averaged over the six locations that this comparison has been made over the last two years, the taller variety showed essentially the same yield response to population differences as the shorter variety (see left graph above). Averaged over nine locations in 2003-05 (see right graph above), the earlier maturing variety responded to population differences much like the June-planted trials reported in the Local On-Farm Tests and Demonstrations-II report. Similarly, the later maturing variety, with approximately ten more days for vegetative growth, responded to population differences much like the May-planted trials reported earlier.

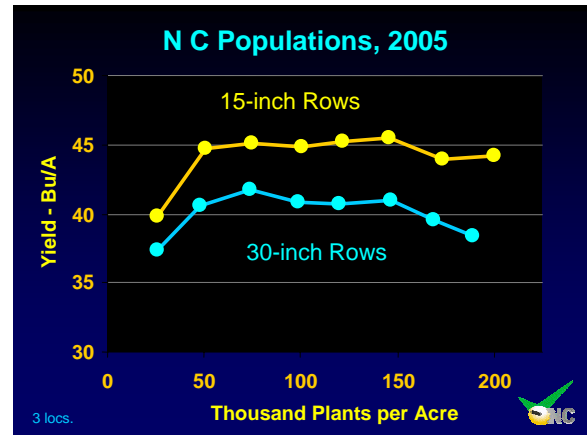
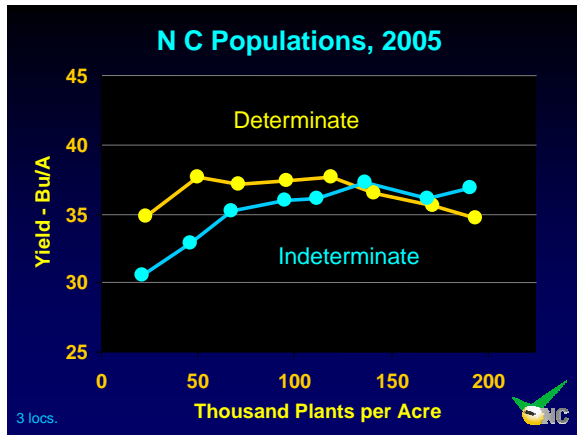
Two Roundup-Ready varieties differing in lodging tendency (excellent versus fair) were used in Bertie, Caldwell, and Edgecombe counties.



Except for the fact that the yield at 50,000 seeds per acre with the variety that is slower to lodge at higher populations yielded higher than would have been expected, both varieties at these three locations responded to population changes very similarly.

Replicated field tests were established in five counties to compare yield, seed costs, and relative profitability of eight planting rates ranging from 25,000 to 200,000 seeds per acre. Final stands, canopy height, and lodging scores have been collected. Two Roundup-Ready varieties differing in growth habit (indeterminate versus indeterminate) were used in Beaufort, Guilford, Hyde (and Beaufort, Tyrrell and Washington) and Randolph/Davidson counties. A single Roundup-Ready variety was planted in two row widths (30-inch versus 15-inch rows) in Hyde (and Beaufort, Tyrrell and Washington), Pamlico, and

Randolph/Davidson counties.



Even though the determinate variety matured within 3 days of the indeterminate variety in each of the three locations, the determinate variety showed very little yield difference over the 7 highest populations (as had been shown earlier for May-planted determinate varieties), while the indeterminate variety showed similar yields only for the three highest populations, and gradually decreasing yields for the lower populations (see left graph above). This pattern for the indeterminate varieties is very similar to what had been shown earlier for June-planted determinate varieties.

The 15-inch and 30-inch rows showed a very similar pattern of yield response to population changes (see right graph above). The 15-inch rows yielded the higher, but that was to be expected.

Plot signs were put up in at least one replicate of all tests, to let interested parties check on the results to date at their leisure. All sites were labeled as an Extension on-farm test site, and as a test supported by the North Carolina soybean checkoff funds.

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