

**COTTON SEEDING RATES: HOW LOW CAN WE GO?**

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**Abstract**

Rising costs of planting seed and technology fees have led some cotton producers to cut their seeding rates in an effort to control costs. How far can seeding rates be reduced without impacting lint yield, fiber quality, and net returns on seed investment? To address this question, we conducted experiments in two similar fields at the Milan Research & Education Center in Tennessee for three years. One field was managed with no tillage and no irrigation, while the other was disc-tilled and pivot irrigated. Seeding rate varied with planting pattern (solid and skip-row), row spacing (15 and 30 inches), and number of seeds planted per foot of row (1 or 2 viable seed/ft). Cultivars were ST4357B2RF in 2006, and ST4554B2RF in 2007-2008. Seed costs and technology fees ranged from \$25.31 with 14,500 seed/ac, to \$108.38 at 87,100 seed/ac. Weeds were managed with glyphosate, and plots were rated for weed suppression by the cotton crop during the season. Earliness was measured as days from planting to 50% open bolls. All plots were harvested with a JD9930 picker equipped with Pro-12 VRS headers for yield and fiber quality. With no tillage and no irrigation, plant stands averaged 61% of seeds planted, final plant height averaged 29 inches, and lint yields averaged 1020 lb/ac. The highest lint yields were obtained with seeding rates ranging from 44,000 to 87,000/ac (26,000 to 49,000 plants/ac). The lowest yield was obtained with 14,500 seed (9,200 plants) per acre, which produced 81% of maximum yield. The highest seeding rates produced the earliest maturing cotton, while the lowest seeding rates (14,500 to 29,000/acre) delayed maturity by about five days. Suppression of weeds by cotton diminished with plant populations less than 26,000/ac, especially in skip rows. In solid planted rows, maximum net return was obtained from seeding rate of 44,000/ac. Net return was reduced at higher seeding rates by about \$40 to \$80/ac, due to higher seed costs and technology fees. In skip-row plantings, highest net returns were obtained from seeding rates ranging from 29,000 to 58,000/ac. Net return was reduced by about \$52/ac due to lower yields from a plant population of 9,200/ac obtained by planting 1 seed/ft in 30-inch 2x1 skip-rows. With conventional tillage and supplemental irrigation, plant stands averaged 57% of seeds planted, final plant height averaged 39 inches, and lint yields averaged 1421 lb/ac. The highest yields were obtained with seeding rates ranging from 44,000 to 87,000/ac, with plant populations in excess of 24,000/ac. The lowest yield was obtained with 14,500 seed (8,900 plants) per acre, which produced 65% of maximum yield. The highest yielding populations also matured about four days earlier than cotton grown at the lowest seeding rates. The cotton crop suppressed weeds most effectively in solid plantings with more than 24,000 plants/ac. Equivalently high net returns were obtained from seeding rates ranging from 29,000 to 87,000 seeds/ac. In solid-planted rows, net return was reduced \$109/ac with 12,300 plants/ac, due to lower lint yields. Net return was similarly reduced \$189/ac in 30-inch 2x1 skip rows with a population of 8,900 plants/ac obtained by planting 1 seed/ft. There were no significant price differences for fiber quality due to seeding rate in any row spacing or pattern in either experiment. Therefore, net returns were driven primarily by lint yields, seed costs, and technology fees. Net returns were more consistently maximized by planting two seeds per foot in skip-rows than by reducing the seeding rate down the row. Results suggest that the likelihood of a satisfactory result from reduced seeding rates depends on the quality of seed and seedbed, the planter, and the weather during and after planting.

**Acknowledgements**

This research was supported in part by a Cotton Incorporated State Support Project and a John Deere Crop Systems Project. We also appreciate the material support provided by Tennessee Tractor, LLC and Ag Center, Inc. We thank the staff of the Milan Research & Education Center for assistance with field work.