High Density Planting Configurations for High Quality Cotton in Short-Season Environments

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Abstract

High plant densities can improve earliness, but excessive interspecific competition can result in yield loss. Previous papers suggested that 20 plants m-2 can combine favorable earliness, yield and fiber quality in regions characterized by short growing season.

This work was aimed to evaluate if higher plant densities can improve earliness, and if interplant competition effects can be counterbalanced by a most favorable spatial arrangement. Conventional spacing in wide rows (WR, 100 x 5 cm, 20 plants m-2) was compared with narrow rows (NR, 75 x 5 cm, 27 plants m-2) and twin rows (TR, 75 x 25 x 7,5 cm, 27 plants m-2) configurations.

The highest plant density modified the WR fruiting pattern, with a more vertical distribution of bolls. In relation to WR, yield location was lower in NR and higher in TR. The percentage of 1st position bolls was higher in TR. High plant densities did not cause better earliness; on the contrary, 85% of opened bolls was observed later in TR than in WR. The different spatial arrangement determined higher yields in NR than in TR, but TR crop showed a more favorable canopy structure and a positive reduction in fiber fineness.