EFFECT OF PLANTING DATE, SEEDING RATE, AND SEED SIZE ON COTTON GROWTH AND YIELD

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Abstract

Within the discussion of seed quality, the value of seed size as it relates to early season growth warrants investigation. Furthermore, the balance of yield and seed cost as it pertains to seeding rates are a seasonal conversation among growers. Much of the decision making for planting is determined by environmental conditions and also those circumstances shortly after planting. The objective of this research was to evaluate the influence of seed size and seeding rates across two planting dates on cotton growth and yield.

Research was conducted in 2020 at two locations in South Carolina, Pee Dee REC (Florence) and Edisto REC (Blackville). Treatments included two planting dates (4-29 and 6-3 at Pee Dee; 5-13 and 5-28 at Edisto), two seed sizes: a small seeded variety (5,550 seed/lb.) and a large seeded variety (3,500 seed/lb.), with four seeding rates (25, 35, 45, and 55k seed/acre). Warm and cool germination percent. Fresh and dry biomass weights were recorded at 1, 3, 5, and 7 lf growth stages. Stand counts, mid-season plant heights, final plant heights, total nodes, boll distribution, seedcotton weight, and lint HVI analysis were recorded.

Due to differences in weather and planting dates, data were analyzed by environment. At Edisto, early season vigor (3lf. dry biomass weights) was significant for the planting date by seed size interaction. The late planted/large seed had the highest vigor fb the early planted/ large seed fb the small seed with no difference between planting dates. Seed size was the driver in this environment, as this was shown with seedling vigor at 7lf with the large seed having greater vigor compared to the small seed. Similar trends were observed with seedling vigor (3lf) at Pee Dee with the planting date by seed size interaction being significant, however, planting date influenced vigor more than seed size. The late planted/large seed had greater vigor fb late planted/small seed fb early planted/ large fb early planted/small seed. The same trend continued through the early season as 7 lf vigor had similar results, however, there was no difference with the early planted regardless of seed size. By the end of the season, there was no difference in yield at either environment, regardless of planting date, seed size, or seeding rate. Little differences were observed with respect to growth habits and fruit distribution within each treatment.