# EFFECT OF COTTON SEED SIZE AND SEEDING RATE ON COTTON GROWTH, DEVELOPMENT AND YIELD

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## Abstract

An experiment was conducted in 2019 in Starkville, MS and Brooksville, MS to determine the impact of seed size and seeding rate have on the development and yield of cotton. Plots consisted of four 97 cm rows that were 12.2 m in length and were replicated four times.

Experiments were conducted using factorial arrangement of treatments within a randomized complete block design. Factors in this experiment 2 different varieties - Deltapine 1646 B2XF and NexGen 3406 B2XF; B) 3 different seed sizes of each variety including Deltapine 1646 B2XF at 11,346 seed/kg, 12,033 seed/kg, and 13,103 seed/kg and NexGen 3406 B2XF at 10,202 seed/kg, 11,321 seed/kg, and 12,216 seed/kg; C) three different seeding rates for each seed size included, 49,400 seed/ha, 98,800 seed/ha, and 148,200 seed/ha. Data collection included a visual vigor rating at 7, 14, 21, and 28 days after planting on a 1-9 scale (1=worst, 9=best). Fresh and dry biomass from five cotton plants at the four to six leaf growth stage per plot, clipped at the soil line. During the first week of bloom, height, total nodes and node above white flower data were collected. Final height, total nodes and nodes above cracked boll were evaluated prior to defoliation. At harvest, 25 boll samples were collected for fiber quality and yield was collected using a spindle picker modified for small plot research.

All data were subjected to analysis of variance using the PROC MIXED procedure in SAS v 9.4 and means were separated using Fisher's Protected LSD at a significance level of 0.05.

Early season vigor was impacted by seed size and seeding rate as observed from visual vigor ratings. Larger seeds and higher seeding rates produced the greatest visual vigor ratings. Fresh and dry weight biomass were also impacted by seed size; larger seed sizes produced greater fresh and dry biomass when pooled over seeding rate and variety. Seeding rate impacted maturity at first bloom with lower seeding rates being slightly delayed in maturity. Plant height, mainstem node counts, and maturity were impacted by low seeding rates with plants being taller, having a higher node count and having slightly delayed maturity. Higher seedcotton yields were observed from larger seed size, higher seeding rate, and from DP 1646 B2XF when pooled over other factors.