

**OPTIMIZING SEEDING RATES OF UPLAND COTTON TO MAXIMIZE PROFITABILITY IN
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Cotton production costs continue to increase. Cotton seed is one of the biggest investments growers make each season, and with many growers seeking out ways to reduce inputs, reducing seeding rates is one of the easiest ways to do so. Seeding rates vary across the cotton belt, but in Central Georgia seeding rates can vary from 25 to 45 thousand seed per acre depending on the farm. However, most are at or above 35 thousand seed per acre. Although there is great variability in seeding rates, generally yields are consistent given all other variables are constant. Therefore, studies were conducted in 2020 and 2021 to evaluate the impact of seeding rate on stand establishment, yield, fiber quality, and profitability. Studies were conducted in 3 locations across the two years, with one being dryland and the others being irrigated. Cotton was planted between early May to early June, dependent on location. Two locations evaluated five seeding rates: 25, 30, 35, 40, and 45 thousand seed per acre. One location evaluated 20, 25, 30, 35, and 40 thousand seed per acre. All experiments were arranged in a RCBD. Stand counts were conducted three weeks after planting. Seed cotton weights were collected at harvest, with seed cotton samples taken from each plot and ginned at the UGA Microgin to determine turnout and obtain fiber quality data. Regardless of seeding rate, plant stand increased with each increase in seeding rate. However, it should be noted that in 2021, the location evaluating lower seeding rates (20 to 40 thousand seed per acre) had lower stand establishment than the other locations. Although there were differences in stand, there were no significant differences in lint yields across seeding rates. Averaged across the two locations with similar seeding rates, lint yields ranged from 1,266 to 1,339 lbs per acre of lint. The location utilizing lower seeding rates had yields ranging from 1,373 to 1,476 lbs per acre of lint. Utilizing lint yields and fiber quality, loan value per acre was calculated, with seed cost subtracted from each seeding rate. There were no differences in loan value per acre minus seed cost at lower seeding rates in 2021 (20 to 40 thousand seed per acre). However, averaged across the locations with higher seeding rates (25 to 45 thousand seed per acre), the highest loan value per acre minus seed costs were observed when 25, 30, and 40 thousand seed per acre were planted (\$642.44 to \$680.79 per acre). These results indicate that in central Georgia, there is little economic benefit to exceeding 30 thousand seed per acre. Conditions change annually, fields are different, and even varieties are different. Future research will evaluate the impact of planting dates, soil types, and cotton varieties on stand establishment and net returns.