

VARIABLY RATE SEEDING: CONCEPTS AND APPLICATIONS IN COTTON**Tom Barber****Terry Griffin****University of Arkansas Division of Agriculture, Little Rock, AR****Abstract**

Precision agriculture focuses on placing products or inputs in a precise manner within a given field. Soil type, depth and productivity may change greatly from one end of a field to another. A study was conducted on-farm for three years to determine the most profitable seeding rate for cotton across multiple soil types and productivity zones. Three locations were utilized each year representing fields in northeast, central and southeast Arkansas. Fields were selected based on the inherent variability. Veris data was acquired for each field to delineate soil types across each field. Seeding rates evaluated were 25,000, 38,000, 48,000, 58,000 and 71,000 seed per acre. Each seeding rate was planted solid across the entire field and replicated four times. Yield was recorded by yield monitors at each location and data were analyzed spatially to determine the optimum seeding rate for each specific soil type. Profitability analyses reveal that optimum seeding rates for cotton change depending on soil type and productivity of the soil. Soils with an EC of 7 or less optimized returns with seeding rates around 38,000 seed per acre while heavier soils with an EC value greater than 25 optimized returns with seeding rates closer to 58,000 seed per acre. Soil productivity also has a direct effect on returns above seeding costs, where less productive soils such as sand blows will rarely ever produce enough cotton to justify planting. This study indicates that variable rate seeding in cotton may be a viable option to maximize returns across multiple soil types. Fine tuning these seeding rates may result in decreased seed costs of up to \$20/acre or more, but should not always be assumed. Total savings in seed will depend on the amount of variability present within a given field.