## EFFECT OF AGRONOMIC INPUTS ON COTTON DEVELOPMENT AND YIELD

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## <u>Abstract</u>

A growing number of untested agronomic inputs are being recommended to cotton producers across the cotton belt. The objectives of this study were to evaluate agronomic inputs used in cotton production systems on early season cotton growth and development compared to current extension recommendations, as well as to determine yield gain from these various agronomic inputs compared to current extension recommendations. The study was conducted in Missouri, North Carolina, and Virginia as well as a location in Mississippi which had a single planting date. The inputs chosen were planting date, in-furrow fungicides, in-furrow insecticides, early season foliar fungicides, 150% soil fertility program, and foliar fertilization of potassium and nitrogen during the bloom period. The study was conducted as a split-plot design with two planting dates as the whole plots and five agronomic inputs as the subplots. The first planting date ranged from May 1 through May 15 across locations and the second planting date ranged from May 23 through June 2 across locations. Current extension recommendations were implemented as the control within each planting date. The final sub-plot treatment was a combination of all agronomic inputs into a "Kitchen Sink" cotton management program. Each treatment was managed with the current extension recommendations of each state with the only exception being the input in question. Each treatment was assigned to a subplot of four rows by 12.2 meters of which plant population, thrips damage ratings, and plant heights were measured to determine the impact of early season inputs on establishment and early season vigor. Thrips damage was rated on a 1 to 5 scale, with 5 being severe damage/death and 1 being no visible damage. Final lint yield was taken from the center two rows of each plot to determine yield gained by the addition of each input. Net returns were also determined based on cotton yield gain from each input compared to current extension recommendations with a base price of cotton at \$0.70 per pound of lint. Treatments containing the in-furrow insecticide Admire Pro at 9.2 ounces/acre reduced early season thrips damage compared to all other treatments. Cotton lint yields were greater at the first planting date compared to the second planting date at all locations, with the greatest penalty for planting late occurring in Missouri. Though cotton lint yields may be increased by the agronomic inputs in the study, only the in-furrow insecticide and in-furrow fungicide netted a positive return based on yield gain and input cost. The "kitchen sink" treatment, including all of the agronomic inputs used in this study, had the lowest net return due to the high cost of the inputs included.