

**EFFECT OF INCREASED AGRONOMIC INPUTS ON COTTON DEVELOPMENT AND YIELD
ACROSS THE MID-SOUTH AND SOUTHEAST COTTON BELT**

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Abstract

While industry continues to introduce new varieties with increasing yield potentials, a growing number of agronomic inputs are being recommended to producers across the cotton belt in the interest of plant health. With these new varieties however, it is important to determine the value of additional agronomic inputs used in intensively managed cotton. 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 and to determine yield and economic gain from these inputs compared to current extension recommendations. The agronomic inputs chosen for this study included a 150% soil fertility program, in-furrow fungicide, in-furrow insecticide, early season foliar fungicide, and late season foliar potassium fertilization. A kitchen sink treatment was also included that consisted of a combination of all the additional agronomic inputs used in this study. The control treatment was based on the current extension recommendations of each individual state that participated in the trial. Two individual randomized complete block designed studies were implemented at each location with either an early or late planting date. The study was conducted from 2014 through 2016 in Missouri (MO), Mississippi (MS), North Carolina (NC), and Virginia (VA). Early season development was quantified by plant population and plant height at five weeks after planting (WAP), neither of which was influenced by additional agronomic inputs when pooled across all locations and years. Thrips injury rating at 3 WAP however was reduced by treatments including the in-furrow insecticide, when compared to current extension recommendations, in both NC and VA when pooled over all three years. This reduction in thrips injury was not observed in either MO or MS however, most likely due to thrips resistance to the neonicotinoid class of insecticides that has been found in the Mid-South. This reduction in thrips injury however did not lead to an increase in yield and none of the additional inputs increased cotton lint yields compared to the current extension recommendations. Due to the lack of a yield increase, the cost of any of the additional inputs was not recuperated, with the greatest economic loss being that of the kitchen sink treatment. Each of the agronomic inputs included in this study is an extension recommended treatment, but only for use under specific circumstances or thresholds, and should not be used as a blanket agronomic treatment across all of a producer's cotton in all years.