

**YIELD PARTITIONING EFFECTS OF LOW-RATE AUXIN APPLICATIONS ON SENSITIVE COTTON****Savana Denton****Tyson Raper****University of Tennessee****Jackson, TN****Darrin Dodds****Mississippi State University****Mississippi State, MS****Chris Main****PhytoGen Cottonseed****Medina, TN****Abstract**

Auxin resistant cotton cultivars are the latest tools producers use to combat herbicide-resistant weed species in season. The widespread implementation of auxin resistant crops has led to an increase in in-season applications of auxins. Auxin drift has subsequently become an issue in the agricultural industry and causes producers to shift management tactics. Yield partitioning research based on auxin application timing has been conducted but more information is needed concerning application rate and the interaction between application rate and timing. Experiments were conducted from 2019 to 2021 in Grand Junction, TN to determine the effects of synthetic auxin exposure on boll positioning, development, and production. Applications of 2,4-D or dicamba were made to cotton cultivars of the opposite technology at 1/64X, 1/256X, and 1/1024X rates at either matchhead square (MHS) or two weeks after first bloom (FB+2WK). Non-treated experimental units were also included. Cotton was box-mapped just prior to mechanical harvest to obtain yield partitioning data. Overall, yield partitioning was affected more frequently when cotton was exposed to low rates of 2,4-D than low-rates of dicamba. Low-rate exposure to 2,4-D at MHS had fewer bolls on middle and upper nodes and inner positions but more bolls on vegetative branches compared to applications at FB+2WK. Regardless of application timing, higher rates of 2,4-D resulted in a higher percentage of bolls set on the third position. There were differences in yield response between years which highlights the role that environment can play in the ability of cotton to recover from in-season auxin injury. This causes difficulty in predicting yield losses.