

## **Towards Increased Understanding of Prohexadione-calcium Rates When Applied to Stress-induced Peanut**

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Field studies conducted in 2017 revealed that use of prohexadione-calcium (PC) as a vegetative growth regulator increased yield in all locations across Mississippi. The rates selected for use in 2017 ( $530 \text{ mL ha}^{-1}$  at 50% and  $530 \text{ mL ha}^{-1}$  at 100% vines touching) were based on labeled recommendations of existing PC products. A leading concern from peanut growers across the state centers on the idea that these rates may be too high if peanuts are already in a stressed-induced situation such as previous application of 2,4-DB or dry growing conditions. Field studies for the 2018 growing season are already underway, located in the same three counties and using the same application rates as 2017. This study was conducted using the peanut varieties grown at each field site from 2017 and 2018 to understand the exact impact of rates of PC applied in stress-induced situations. Stressors included in the study (but not limited to) were: peanuts grown in a low moisture regime for several weeks, peanuts sprayed with 2,4-DB in the same tank mix, peanuts sprayed with low rates of 2,4-DB over subsequent weeks, and peanuts grown in weedy conditions. Applications were made at 10, 25, 50, 75% vines touching as well as an application at R1 using a two-nozzle research track sprayer at  $187 \text{ L ha}^{-1}$  and 276 kPa pressure. Peanuts were grown in pots outdoors in 96.5 cm rows in order to easily remove individual pots for treatment but maintain realistic field conditions. Pots were measured for weekly growth up to 28 days after treatment (DAT) and harvested for biomass at beginning peg production. Harvested plants were dried for 48 h at  $60^\circ\text{C}$  and dry weights were recorded.

It is expected that all varieties of peanut grown in stress-induced conditions will respond aggressively to labeled rates of PC applied at each growth stage. Observing the degree of response by variety will help to tailor rates to be used in the field where stress-induced conditions may persist. Results from this study will aid in the recommendations given to Mississippi peanut growers who incorporate PC applications into their production system to maximize return on investment.