Evaluation of Peanut Development Using Plant Growth Regulators as Seed Treatment and Flumioxazin Application

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Georgia produces the majority of the peanuts cultivated across the US. Proper weed control techniques allied to plant growth regulators (PGRs) can improve plant establishment and development within the season to increase yield. This study aimed to evaluate the effects and interaction of flumioxazin and treatments with plant growth regulators (PGRs) on peanuts. A split split-plot in a completely randomized block design was established in Plains and Ty Ty in mid-April of 2020 and early-mid May of 2021. The treatments were the following: six cultivars (TifNV-HO, GA 20VHO, GA 14N, GA 06G, GA 16HO, GA 18RU); three plant growth regulators as a seed treatment (non-treated control, 0.063 g a.i. ha^{-1} of 3-indolebutyric acid (IBA) and 0.011 g a.i. ha^{-1} of cytokinin, 14.82 g a.i. ha^{-1} of gibberellic acid); and herbicide (non-treated control and flumioxazin 105 g a.i. ha-1). Seeds were PGR treated one day before planting. Flumioxazin was sprayed right after planting. Measures included injury (0 – 100%), stand counts (1 meter of row), plant height and width, and yield. Data were analyzed by year using Agroestat®.

Peanut at Ty Ty and Plains showed no injury regarding herbicide treatments in both years. For stand counts, plant height, and width, differences were observed at both locations during the 2020 and 2021 seasons. In 2020, the stand counted for GA 18RU in Ty Ty were benefited from the application of gibberellic acid, whereas for TifNV-HO, both PGR treatments reduced the number of plants per meter compared to the non-treated control. Plant height and width demonstrated no differences for both locations during 2020. However, in Ty Ty, the cultivar GA 16HO, when treated with gibberellic acid, had a higher width than the non-treated seeds.

In terms of yield, only in 2021 the cultivar GA14N treated with IBA increase in % the final yield in Plains. Overall, the 2021 differences compared to the 2020 season could be related to the planting date, which was performed later, in early-mid May. The PGR treatments resulted only in minor improvements of the parameters evaluated, and different methods of seed treatments should be investigated.