

Seedling Peanut (*Arachis hypogaea*) Physiological Response to Flumioxazin

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Over 50% of U.S. peanut production can be credited to Georgia. The growing season for peanut can extend up to 150 days, it is essential to manage weeds in such a manner as to achieve maximum yield potential. This includes applications of PRE herbicides. Numerous PRE herbicides are registered for peanut including pendimethalin, diclosulam, and flumioxazin. Emerging peanuts will inevitably come into contact with these PRE applied herbicides. A study was performed in Ty Ty and Plains, GA in order to record the physiological effects of emerging peanut to PRE herbicides. A 3x2 factorial RCBD comprising of 3 herbicide treatments and 2 seedling germination rates with 4 replications was utilized at both locations in the 2018 growing season. Treatments included a nontreated control, 107 g ai ha⁻¹ of flumioxazin PRE, and diclosulam at 27 g ai ha⁻¹ PRE. All plots received an application of pendimethalin at 4480 g ai/ha. Physiological measurements included photosystem II efficiency, photosynthesis, and electron transport using a Li-COR 6800 to record these measurements. Peanut stand counts and diameter measures were also recorded. Data was analyzed by location in SAS 9.4. Both Ty Ty and Plains had treatment differences in electron transport, but no trend was noted. Plains also had a difference in treatment by seed vigor. Intercellular CO₂ differences were noted in Ty Ty by plant date and by seed vigor. Plains had no differences in intercellular CO₂. PRE applications of flumioxazin do affect emerging peanuts physiologically, but are not detrimental to early crop growth with no differences in stand establishment and early season growth.