

Peanut Response to Metribuzin

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Herbicide-resistant Palmer amaranth is one of the most problematic weeds in agronomic cropping systems in Georgia. The wide germination window of Palmer amaranth seed allows it to emerge after field corn harvest, and if left uncontrolled, can contribute significantly to the weed seed-bank causing problems in rotational crops. One option for a lay-by (in-crop) or post-harvest burndown application in field corn for postemergence and residual control of Palmer amaranth is metribuzin. However, the current rotational crop restrictions for metribuzin would prevent peanut planting for 18 months after application. Peanut tolerance to metribuzin has not been well documented. Therefore, the objective of this research was to evaluate the tolerance of peanut to metribuzin. Field studies were conducted in 2017 and 2018 in Ty Ty, GA to evaluate the tolerance of peanut to various rates of metribuzin. The soil type at this location was a Fuquay sand with 0.53-0.76% OM, 94% sand, 4% silt, 2% clay, 6.0 pH, and 3.3-3.5 CEC. 'GA-06G' peanut were planted in late April both years. In a RCBD with four replications, metribuzin was applied preemergence (two days after planting) at 0, 35, 70, 140, 280, 420, and 560 g ai ha⁻¹. The targeted application rate for a lay-by or post-harvest burndown applications in field corn is 280 g ai ha⁻¹. Treatments were applied using a CO₂-pressurized backpack sprayer calibrated to deliver 140 L ha⁻¹ using 11002 AIXR nozzles. Rainfall in the first month after planting was 12.95 and 15.93 cm for 2017 and 2018, respectively. Plots were maintained weed-free using a combination of hand-weeding and labeled herbicides. Data collected included visual crop injury, peanut stand reduction, and yield. Data were subjected to nonlinear regression using log-logistic analysis to demonstrate a dose-response relationship. Year by treatment interactions were significant for peanut injury and stand reduction, so data were separated by year. However, yield loss data were pooled over years. There was a direct relationship between rate and the response variables. As metribuzin rate increased, injury, stand loss and yield loss all increased. Generally, visual injury, stand loss, and yield loss were negligible at rates less than or equal to 140 g ai ha⁻¹. With a targeted application rate of 280 g ai ha⁻¹ and an estimated half-life of 30-60 days, metribuzin should have limited negative impacts on peanut grown in rotation when used in lay-by or post-harvest treatments for the prevention of Palmer amaranth seed rain in field corn.