

PEANUT RESPONSE TO METRIBUZIN

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INTRODUCTION

Metribuzin is a herbicide labeled for weed control in various crops grown in Georgia including carrots, tomatoes, and soybeans. Metribuzin is a member of the triazine herbicide family, a PS II inhibitor (WSSA MOA #5), and has an average field half-life of 30 to 60 days. The first commercial sale of metribuzin began in 1973 (Sencor®). Current trade names for metribuzin include Dimetric®, Metriclude™, Metricor™, Metrixx, and TriCor®.

In Georgia, peanut can be grown in rotation with crops that are treated with metribuzin. Current rotational crop restrictions for metribuzin would prohibit 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.

MATERIALS AND METHODS

A small-plot, replicated field trial was conducted in 2017 at the UGA Ponder Research Farm near Ty Ty, Georgia. The soil type at this location was a Fuquay sand with 0.53% OM, 94% sand, 4% silt, 2% clay, 6.0 pH, and 3.5 CEC. 'GA-06G' peanut were planted in twin rows on April 24. In a randomized complete block design with 4 replications, metribuzin (TriCor® 4F) was applied preemergence 2 days after planting (DAP) at 0, 0.031, 0.062, 0.125, 0.25, 0.375, and 0.50 lb ai/A. The recommended use rate of metribuzin in most Georgia soils is 0.25 lb ai/A. In the first 10 DAP, the plot area received 2.08" of rainfall/irrigation.

All treatments were applied using a CO₂-powered, backpack sprayer calibrated to deliver 15 GPA @ 35 PSI and 3.5 MPH using 11002AIXR nozzles. The plot area was maintained weed-free using a combination of hand-weeding and labeled herbicides (flumioxazin, diclosulam, imazapic, pendimethalin, s-metolachlor, and 2,4-DB). Data collected included visual estimates of peanut injury, stand reductions based upon the number of emerged peanut plants/5 row feet @ 31 DAP, and yield. All data were subjected to ANOVA and means separated using Duncan's Multiple Range Test (P=0.10).



Figure 1. Peanut response to metribuzin @ 29 DAP. From left to right: 0.5, 0.25, 0.125, 0.062, 0.031, 0 lb ai/A.

Table 1. Peanut injury, stand reduction, and yield reduction caused by preemergence applications of metribuzin, 2017.

Metribuzin Rate (lb ai/A)	Peanut Response ^a			
	Crop Injury (%) ^b	Crop Injury (%) ^d	Stand Reduction (%) ^e	Yield Reduction (%)
0	0 d	0 d	0 d	0 c
0.031	0 d	0 d	5 cd	1 c
0.062	3 d	0 d	4 cd	1 c
0.125	18 c	13 c	10 c	8 c
0.25	63 b	55 b	64 b	44 b
0.375	89 a	90 a	96 a	100 a
0.50	95 a	95 a	100 a	100 a

^aMeans in the same column with the same letter are not significantly different according to Duncan's Multiple Range Test (P=0.10).

^bVisual injury estimates based upon a 0 to 100% scale (0 = no injury; 100 = complete crop death).

^c29 DAP; ^d98 DAP; ^e31 DAP.

RESULTS AND DISCUSSION

- 1) Generally, there was a rate response to metribuzin for peanut injury, stand reduction and yield reduction (Table 1, Figure 1).
- 2) Metribuzin rates ranging from 0.125 to 0.50 lb ai/A caused significant peanut injury and stand reductions.
- 3) Metribuzin at rates ranging from 0.25 to 0.50 lb ai/A caused significant peanut yield reductions.
- 4) Peanut yields were not significantly reduced by metribuzin at rates of 0.125 lb ai/A and below.
- 5) Based upon these results, peanut grown in crop rotations where metribuzin @ 0.25 lb ai/A was applied could be safely planted after 2 half-lives have occurred (~120 days).