Using Diclosulam to Reduce Yellow Nutsedge (Cyperus esculentus) and Purple Nutsedge (Cyperus rotundus) Tuber Production.

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Yellow and purple nutsedge are perennial species that resist numerous control measures, form dense colonies through tuber production, and can significantly reduce crop yield. In the Southern US, yellow and purple nutsedge are among the most troublesome weeds in numerous cropping systems including peanut, cotton, and fruiting vegetables. Due to the similarity in size, tuber contamination issues can persist in harvested peanuts. Diclosulam has activity for control of nutsedge, but only visual control information is usually presented. The objectives of this experiment were to evaluate the effectiveness of diclosulam on yellow and purple nutsedge tuber production and vegetative growth. In 2016 at the Coastal Plains Experiment Station, yellow and purple nutsedge tubers were pre-sprouted and transplanted into outdoor microplots, a single tuber with an emerged shoot was the initial experimental unit. After 7 wk of growth, the transplanted nutsedges were treated with diclosulam at 1/8, 1/4, 1/2, 1 (26 g ai ha⁻¹), 2, and 4 X-rates. A non-treated control was included for comparison. Yellow and purple nutsedge plants were then harvested 8 wk after herbicide application. The experiment had five replications in a RCBD, with blocking based on the number of shoots emerged at time of application. Tuber and shoot data were collected at harvest for marked plants which had emerged prior to diclosulam application and unmarked plants which were not present at the time of application. Yellow and purple nutsedge had equal amounts of vegetative growth at the time of application. For yellow and purple nutsedge, there was a dose-response reduction of biomass (75%), tuber production (50%), and tuber germination (50%) with respect to unmarked shoots and marked tubers at the 2X rate. There was a dose-response with respect to the reduction of the marked and unmarked tubers in reducing overall tuber viability for yellow nutsedge. Overall for purple nutsedge, there was a reduction in tuber viability. Future studies will address the effects of diclosulam on nutsedge tuber persistence in the soil.