

## **Tine Weeding Integrated with Herbicides in Conventional Peanut Production**

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Previous research indicated that repeated cultivation with a tine weeder was an effective weed management component in organic peanut production. Studies were conducted for four years in Tifton, GA starting in 2014 to determine if tine weeding could be integrated with herbicides in conventional peanut production. Experiments evaluated a factorial arrangement of two levels of cultivation with a tine weeder and eight herbicide combinations. Cultivation regimes were cultivation with a tine weeder six times at weekly intervals and a non-cultivated control. Herbicides were labelled rates of ethalfluralin PRE, s-metolachlor PRE, imazapic POST, ethalfluralin/s-metolachlor, ethalfluralin/imazapic, s-metolachlor/imazapic, ethalfluralin/s-metolachlor/imazapic, and a nontreated control. The herbicides chosen were based on knowledge of the weed species composition at the research sites. Smallflower morningglory was present each year of the study. Treatments that included imazapic effectively controlled smallflower morningglory and did not require cultivation to supplement control from the herbicide. However, cultivation using the tine weeder supplemented ethalfluralin and/or s-metolachlor and the integrated combination effectively controlled smallflower morningglory. In the absence of cultivation, ethalfluralin and/or s-metolachlor did not effectively control smallflower morningglory. Annual grasses were effectively controlled by treatments that included ethalfluralin and/or s-metolachlor and did not need cultivation to supplement control provided by the herbicides. However, imazapic alone did not effectively control annual grasses and needed supplemental control from tine weeding. Interestingly, peanut yields did not respond to improved weed control from the integration of tine weeding with herbicides in two years of four. Peanut were cultivated with the tine weeder in May and June, with 2014 and 2017 having more total rainfall and days of rainfall events during that time period compared to the other years. Rainfall and wet soils reduced performance of the implement, lessening the benefits of cultivation. While weed control was improved by cultivation in 2014 and 2017, the benefit was not enough to affect peanut yield. In years without excessive rainfall during the cultivation period, peanut yields were increased by cultivation used to supplement herbicides. These results indicate that cultivation with the tine weeder can supplement herbicides and perhaps reduce herbicide use.