

Evaluation of Cover Crops and Soil Herbicides for Weed Suppression in Peanut Production

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With increasing prevalence of herbicide resistant weeds and limited modes of action in postemergence weed control, peanut producers have to utilize additional weed control methods. More producers utilize residual herbicides to maintain a weed free field during crop emergence and control palmer early in the season. The combination of high cover crop residue with residual herbicides can provide additional early season weed control. Cover crops can also provide many other benefits to peanut cropping including conserving soil moisture for planting, increasing soil organic matter, and reducing soil erosion. Additionally, previous studies have shown that cover crop residues do not increase disease pressure in peanut compared to conventionally tilled systems which has been a concern for producers. This study compared the weed control benefits of high cover crop residue with residual herbicides to a conventional tillage system with the same herbicides.

The study was conducted in Headland Alabama (Wiregrass Research and Extension Center) by Katilyn Price, an Auburn University doctoral student and weed science program technician, along with Steve Li, Alabama Extension weed scientist. The research involved 4 different residual herbicide treatments including Warrant, Valor, Strongarm, Dual Magnum at full label rates, and a non-treated check in both high residue cover crop and conventionally tilled plots. There were no postemergence herbicide treatments sprayed on these plots as the researchers wanted to evaluate preemergence herbicide control only. In the fall 2018 rye was planted at 100 lbs/A, it was then rolled and sprayed with glyphosate in March 2019. The field had an initial rye residue of 6,500 lb/A at the day of planting and had degraded to 3,000 lb/A at 56 days after planting. The conventionally tilled plots were planted next to the high residue cover crop plots to ensure similar weed pressure. Weed counts and control ratings were recorded for grasses, nutsedge, pigweed, morningglory, and sicklepod throughout the study. Finally, a field weed biomass was collected at 56 days after planting in each plot.

Residual herbicides with the high cover crop residue had less grasses, nutsedge, and broadleaf weeds compared to the conventionally tilled treatments at 21 and 35 days after planting. Overall, all herbicide treatments with cover crop residue had 65-88% less weed biomass at 56 days after planting compared to the conventionally tilled non-treated check. By 35 days after planting Warrant, Strongarm, and Dual Magnum in conventionally till plots had 45-65% more broadleaf weeds than the high cover crop residue plots with the same herbicide treatments. Strongarm and Valor with cover crop residue had nearly clean plots at 68 days after planting while peanuts could hardly be found in the conventionally tilled plots with the same herbicide treatments.

In this study, high cover crop residue with residual herbicides provided greater overall early season weed control during peanut emergence than conventional. It also provided weed control longer into the season compared to the conventionally tilled system which allowed time for the peanuts to canopy without additional herbicide treatments. Utilizing high residue cover crops in

peanut production could reduce herbicide applications, preserve current modes of action in peanuts as well as provide an additional control method for herbicide resistant palmer. Valor and Strongarm with high cover crop residue had more effective weed control and are viable options for producers. This study is going to be continued at Headland and Shorter, Alabama in the summer of 2020 to gather more results. Project teams appreciate National Peanut Board and Alabama Peanut Producer Association for providing funding support and Wiregrass REC for managing this trial.

	
Strongarm with high residue 68 days after planting	Valor with high residue 68 days after planting
	
Strongarm with conventional tillage 68 days after planting	Valor with conventional tillage 68 days after planting