On-Farm Evaluation of Nozzle Types for Peanut Pest Management Using Commercial Sprayers

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More growers are adopting auxin-resistant technologies each year and adding auxin resistant crops to their production systems. In Georgia, growers who plant auxin-resistant cotton are required to utilize nozzles that produce coarser droplets when spraying auxin herbicides to minimize potential off-target movement of pesticides. Consequently, these nozzles are also being used in peanuts (an important rotational crop with cotton) since changing nozzles between crops is uncommon for growers. However, larger droplets can result in reduced spray coverage leading to less effective pest control. Therefore, seven on-farm trials were conducted in commercial peanut fields using commercial sprayers from 2018 to 2020 across four different locations in Georgia to compare the spray performance of air-induction (AI) nozzles that produce very coarse to ultra-coarse droplets with non-AI (conventional flat fan) nozzles that produce medium to coarse droplets for pest management in peanuts. For each trial, test treatments were implemented in replicated strips where each strip represented a nozzle type. For nozzle comparison, XR and XRC represented non-AI nozzles while TADF, TDXL, TTI, and TTI60 represented the commonly used AI nozzles in these trials. Spray deposition data for each nozzle along with disease ratings, weed and insect counts were collected in all on-farm trials. Peanut yield was collected at harvest. Results indicated that the AI nozzles produced larger droplets than the non-AI nozzles in all nozzle tests; however, spray coverage varied among the nozzle types. Nozzle type did not influence pest (weed, disease and insect) control, or peanut yield in any of the on-farm trials, which suggested that peanut growers can utilize these coarser droplet nozzles for pest management without any noticeable reduction in pest control or peanut yield. Future research on nozzle evaluation needs to investigate the influence of droplet size, carrier volume, and pressure on coverage and canopy penetration.