2021 Georgia Peanut Commission Grant Report

On-Farm Demonstration of Evaluation Spray Nozzle Types to Improve Fungicide Application in Peanuts and Education

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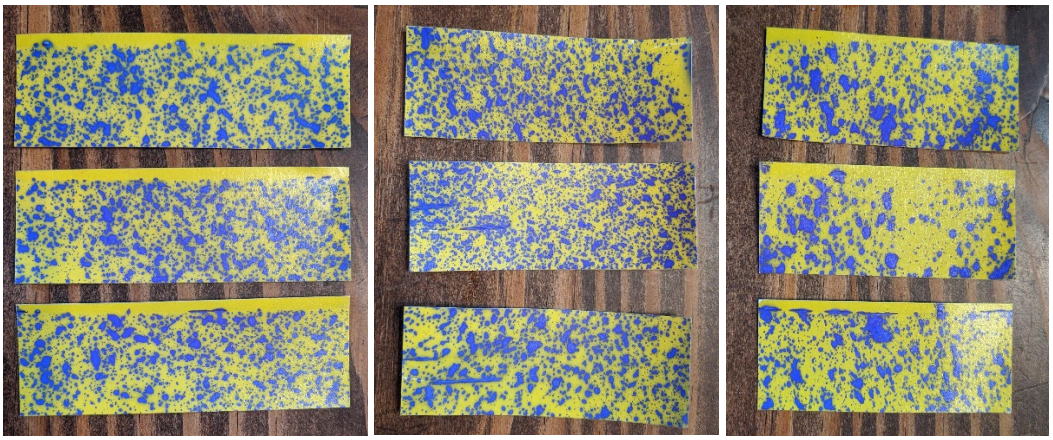
Objectives: Many factors affect the efficacy of peanut fungicides on disease control. Sprayer nozzle type is one selection tool that affects this efficacy through various spray patterns and droplet sizes producing differing canopy coverage and penetration. Nozzle type is one consideration for optimizing spray coverage for fungicide applications in peanut. Nozzle selection to provide uniform spray coverage and canopy penetration remains a priority for growers when applying chemicals to crops. This study compared the farmer cooperator's conventional spray nozzle with two other nozzle types producing differing spray patterns and droplet sizes in the grower's fungicide spray program. A mid-season, on-farm grower meeting was organized to showcase similar trails from last year and provide insight on proper nozzle selection for type of chemical application.

Plan of Action: This field experiment was conducted in a large-scale field setting using a commercial 80 foot boom sprayer (John Deere 4630). Peanut variety (06G) was selected by grower cooperator and only one variety was used for study. Peanuts were planted with a twin row planter. The boom was divided in three sections to accommodate three treatment groups. These treatment groups included the grower's conventional nozzle, and two other types with differing spray patterns and droplet sizes. There was an untreated check in the field where no fungicide is applied. This check was sprayed separately for insect control if needed. Treatments were implemented in long strips where each sprayer pass represented the three nozzle types. Each treatment was replicated four times. Sprayer coverage and penetration was assessed by placing water sensitive paper (spray cards) within the canopy at multiple locations and heights within the strip and along the spray boom. Disease ratings were conducted on each treatment and replication. Yield data were collected at harvest. In addition, a grower meeting was planned for a mid- season update and provided an overview of precision ag technologies including results from similar trials from the prior year. Summarized data will be provided after data interpretation through a one-page grower-friendly document and distributed at county production meetings.

Results:

Spray cards used within the canopy exhibited greater spray coverage for the John Deere 3D as compared to the twin fan or the flat fan nozzles at both canopy levels. This did not translate into less white mold hits or leaf spot pressure for the 3D nozzles in this trial.

Twin Fan Nozzle **3D Nozzle** **Flat Fan Nozzle**



Leaf spot ratings were taken just prior to digging. Flat fan nozzles averaged a rating of 5.0, 3D averaged 4.8 and twin fan averaged 4.8. White mold ratings were measured behind the digger in 100 ft of row. Flat fans averaged 1.17 ft of white mold hits, 3D averaged 2.08 ft, and twin fans averaged 1 ft of white mold hits. Though white mold was less common in the field, the leaf spot pressure was prevalent across the field.

Flat Fan

3D

Air Twin