Impact of Soybean Canopy on Aphid Immigration and Soybean Mosaic Virus Incidence

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Experimental Design

- Split plot
- One soybean variety, AG2101
- Main plot = insecticide
  - Warrior 1EC (2.5 oz/a): V3, R1
  - Lorsban (1 pt/a): 4E R4
- Subplot = herbicide (V3)
  - Water
  - Roundup Ultra (2 pt/a)
  - Raptor (5 oz/a)
- Inoculated 2.5% SMV strain W-180 at V1
Average Number of Aphids Collected per Trap per Day

- Herbicides and Insecticides Sprayed
- Insecticide Sprayed
- Insecticide Sprayed

V1  V3  V5  R1  R4  R5  R6

Date 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Average number of aphids per trap

- All aphids
- Aphis glycines
- Other aphids
Leaf Area Index is Affected by the Application of Insecticide

Leaf Area Index

Growth Stage

Insecticide

None

Leaf Area Index

R2 R4 R5 R6

Growth Stage
Significantly More Aphids Landed in Insecticide Treated Plots (P = 0.0715)

- Herbicides and Insecticides Sprayed
- Insecticide Sprayed
- Insecticide Sprayed

As shown in the graph, the average number of aphids per trap varies throughout the months of June to September. The green line represents the average number of aphids in plots treated with insecticides, while the yellow line shows the number in plots without insecticides. The data peak significantly during the months of July and August, demonstrating the effectiveness of the insecticide treatments.
Increase in Soybean Mosaic Virus Over Time

Soybean aphid numbers increase

Date

Percent SMV-infected plants

Insecticide
None
Soybean aphid numbers increase
Average Number of All Aphid Species Collected per Trap per Day by Herbicide Treatment

Date

Average number of aphids per trap

Herbicides and Insecticides Sprayed

Insecticide Sprayed

Insecticide Sprayed

V1 V3 V5 R1 R4 R5 R6

No herbicide

Roundup

Raptor
Final Yield

Yield (bu/a)

- No herbicide, no insecticide
- Glyphosate, no insecticide
- Imazamox, no insecticide
- No herbicide, insecticide
- Glyphosate, insecticide
- Imazamox, insecticide
Conclusions

• The application of insecticide increased soybean canopy density
• Significantly more aphids landed in the insecticide-treated plots
• Herbicides and insecticides did not significantly affect the incidence of SMV, probably due to the high aphid pressure
Conclusions

• Control of the soybean aphid using insecticides does not control SMV
• The use of insecticides to control the soybean aphid does not improve yield when SMV incidence is high
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