

Evaluation of Carbaryl Insecticide on Yield of Modified Relay Intercrop Soybeans

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Objective

To evaluate yield response of Modified Relay Intercrop soybean to the application of carbaryl insecticide applied at growth stage R1 with soybeans exhibiting 15 % defoliation.

Background

Crop Year:	2011	Soybean Variety:	Pioneer 93Y20
Location:	OSU Unger Farm	Row width:	10 inches
County:	Crawford	Insecticide:	Carbaryl applied @ 1.0 lbs a.i./acre on 8-4-2011, soybeans @ GS - R1
Soil Type:	Blount	Fertilizer:	For wheat and soybeans, 107-81-75 lbs/acre
Drainage:	Systematic	Soy Seed Rate:	220,000 seeds/acre
Previous Crop:	Wheat	Soy Harvest:	Nov. 18, 2011
Tillage:	No – tillage		
Soil Test:	pH 6.8, P 23 ppm, K 124 ppm		
Soy Planting:	June 13, 2011		

Methods

Pioneer 25R56 soft red winter wheat was planted Sept. 30, 2010 in 10 inch rows with a Great Plains drill at a rate of 1.4 million seeds per acre. Wheat yield over the soybean intercrop plot area was 82 bushels/acre. Soybeans were planted (intercropped) June 13, 2011 at a rate of 220,000 seeds per acre in 10 inch rows with the same drill used to plant wheat (minus coulter cart). Bean leaf beetle and Japanese Beetle were observed feeding on soybean leaves in early August. With an estimate of 15% defoliation and intercrop soybeans in growth stage R1, carbaryl insecticide was applied in 16 gallons of water spray carrier at a rate of 1.0 lbs a.i. per acre on 8/4/11.

This study used a randomized complete block design with two treatments replicated 3 times to compare carbaryl insecticide treated soybeans to untreated soybeans over yield. A small plot combine was used to harvest plots on Nov. 18, 2011. Plot size was 5 by 48 feet.

Treatments

- 1) Carbaryl treated soybean plants at GS R1
- 2) Control – untreated soybeans

Results

Table 1. Moisture and Yield of MRI Soybeans in 25R56 Wheat

Treatment	Ave. Moisture	Ave. Yield (bu/A)
Carbaryl	17.1	31.0
Control	17.1	30.1
LSD (P=0.05)		NS
CV(%)		6.2

Summary

This study was conducted at OSU Unger Farm in north central Ohio where Modified Relay Intercropping (MRI) is practiced. MRI with soybeans into wheat is a practice where farm income can be improved over a wheat grain only crop. However, a perceived problem of intercrop soybeans has been bean leaf beetle, Japanese beetle or grasshopper feeding on soybeans when the wheat has been combined. MRI soybeans are etiolated and very spindly at wheat harvest. This is due to soybean plant competition with wheat for light. As such, it has been observed in previous studies that intercrop soybeans receiving a foliar insecticide treatment after wheat harvest may yield more than the control (<http://agcrops.osu.edu/on-farm-research/research/2010/MRIAsanreatment2011%20FINAL.pdf>.) Therefore, to further test this observation, carbaryl insecticide was applied to MRI soybeans at Reproductive Stage 1 when 15% soybeans defoliation was estimated. Yields in this trial were not significantly different over the insecticide treatment and control.

Soybean pod feeding was evaluated by checking plants in each plot at harvest. Average pod feeding for treated plots was 13% and 14% for untreated plots. This finding would suggest scouting and if pod damage thresholds (10-15% pod feeding in first crop soybeans and beetles present) are met; a late season insecticide treatment may be applied providing the pesticide label mandated time period between insecticide treatment and harvest is not an issue.

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