Interseeding Cover Crops into Twin Row Soybean

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Objective

To determine the response of corn yield to interseeding cover crops into growing soybean

Background

Crop Year:	2017	Previous Crop:	Soybean
Location:	Defiance, Ohio	Tillage:	No till
County:	Defiance County	Planting Date:	May 16, 2017
Soil Type:	Latty silt clay	Seeding Rate:	165,000 seeds/acre
	Fulton silty clay loam	Variety:	Wellman 4529 (RM 2.9)
Drainage:	Systematic Subsurface	Harvest Date:	September 22, 2017

Methods

A trial was established to evaluate the soybean yield response to interseeding cover crops into growing soybean compared to soybean yield without interseeding cover crops (control). Four treatments of cover crop and three planting dates were established using a randomized complete block design with four replications. Plots were 17.5 feet wide with field length of approximately 2,400 feet. Soybeans were planted with a twin row planter that has 8 inch spaced twin rows on 30 inch center spacing. All plots received the same nutrient and weed control practices.

Three species of cover crops were selected and interseeded separately: annual ryegrass, cereal rye, and oats. Each cover crop was interseeded using a 7 row tractor-mounted toolbar with disk opener and seed planting units on 30 inch row spacing. Soybeans received pre-emergent herbicides (April 19), first post-emergent herbicide (May 17) and second post-emergent herbicide (July 19) prior to interseeding each cover crop. Each cover crop was interseeded separately on July 26, August 9, and September 11. The soybean stage of development was at R3 (beginning pod), R5 (beginning seed), and R7 (beginning maturity) for each of the respective planting dates. Soil conditions were moist and mellow on July 26 while soil conditions were dry, hard and cracked on August 9 and September 11. Annual rye grass was interseeded at a seeding rate of 13 pounds per acre, cereal rye was interseeded at a seeding rate of 30 pounds per acre, and oats were interseeded at a seeding rate of 27 pounds per acre.

Plots were harvested with a commercial combine with the yield record taken from the entire 20 foot width and length of each plot. Yield was determined by a calibrated yield monitor with yield adjusted to 15.5% moisture. Data were analyzed using SAS and means separated using LSD at α=0.05.

Results

Soybean Yield Effect by Interseeding Cover Crops		
Treatment	Interseeding date	Mean Yields (bushels/acre)
Oats	July 26	57.1 a
No Cover Crop (control)	N/A	53.1 ab
Oats	Sept 11	50.7 abc
Cereal Rye	Aug 9	50.1 abc
Cereal Rye	July 26	49.0 bc
Annual Ryegrass	Aug 9	48.7 bc
Annual Ryegrass	July 26	47.5 bc
Oats	Aug 9	44.8 c
Cereal Rye	Sept 11	44.5 c
Annual Ryegrass	Sept 11	44.0 c
	Treatment effect significant at alpha = 10% Mean yields with different letter are significant	

Summary

There was significant treatment effect on some soybean yields. Oats interseeded at July 26 yielded the highest and were not significantly different from three additional treatments, including the control. Three treatments yield significantly less than the check: oats at August 9, cereal rye at September 11, and annual ryegrass at September 11. No significant crop damage was observed due to driving between the soybean rows to interseed the cover crops on any of the three interseeding dates. It is uncertain why two of the September 11 treatments resulted in significantly lower soybean yields in the absence of driving damage from interseeding and only 11 days between interseeding and soybean harvest. All cover crops were considered well established for their respective planting date at the time of soybean harvest based on general observation of 4 to 10 inch cover crop growth annual ryegrass, cereal rye and oat across all plots. Additional research years will be needed to draw further conclusions and observations. The 2017 trial provide a lot of experience about interseeding equipment and timing to establish a cover crop in soybean prior to a fall aerial seeding or a post soybean harvest direct seeding method.

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