

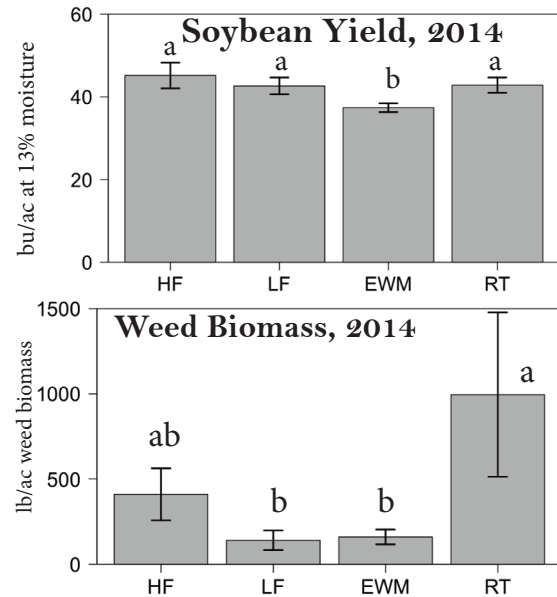
Ready to Roll?

New Field Research on Organic No-Till Soybean with Rolled-Crimped Cover Crops Twilight Tour June 18, 2015

Weed-Soybean Competition in Organic Cropping Systems

- Does competition between weeds and soybeans differ among cropping systems?
- If so, are these differences related to soil quality?

Organic Cropping Systems Experiment	
Treatment	Philosophy
High Fertility (HF)	Maximize yield with more inputs
Low Fertility (LF)	Maximize profit with fewer inputs
Enhanced Weed Management (EWM)	Better long-term results with fewer weeds
Reduced Tillage (RT)	Better long-term results with improved soil



Compared to our weed-free control treatment, soybean yields under standard management were 9% lower.

Musgrave Organic Soybeans & Silage (“MOSS”)

Background: Most research on organic no-till has focused on cover crop management and surprisingly few organic experiments have compared tilled soybean production to no-till. Moreover, little information is available about the value of rye as a forage crop and how harvesting rye for forage compares to plowing the cover crop or rolling and no-till planting soybean.

Research questions: What are the soil impacts of different tillage systems utilizing cereal rye cover crop while producing corn and soybean?

Experimental treatments:

- 1) No-till rolled rye
- 2) Rye harvested at boot-stage then plowed under
- 3) Rye plowed down at jointing stage
- 4) Control with no cover crop



Harvesting cereal rye for rylage; the remaining rye stubble was plowed into the soil before soybean planting.

Dates: Cereal rye seeded (3 bu/acre) October 7, 2014. Soybeans (250,000 seeds/acre) planted June 6, 2015.

Winter cereal cover crop evaluation and organic no-till soybean planting date

Which cereal cover crop makes the best mulch for soybeans? When is the best time to roll?

In organic no-till soybean production, winter cereal cover crops are typically rolled at anthesis to ensure adequate termination. The goal of this experiment is to double-roll winter cereal cover crops (cereal rye, triticale, and barley) at different soybean planting

dates and compare the effects on soybean yield and weed suppression. As some of the cultivars were not at anthesis at the earlier rolling-crimping dates, double rolling improved termination.

Cover crop planting date: Sept 19, 2014

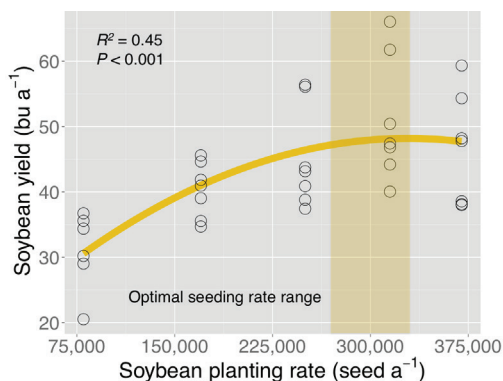
Soybean seeding rate: 300,000 seeds/acre

Soybean variety: 'Viking O.2299N',
2.2 relative maturity



Left, clockwise: Cereal rye beginning anthesis, cereal rye full anthesis, rolled and standing cereal rye, rolling cereal rye and drilling soybeans in one pass, soybeans growing in cereal rye mulch, closing wheels on soybean planter, rolling cereal rye.

Results from 2014



Soybean planting rate (seed a ⁻¹)	Soybean seed cost (\$ a ⁻¹)	Average soybean yield (bu a ⁻¹)	2014 soybean* market value (\$ bu ⁻¹)	Partial profit (\$ a ⁻¹)
80,000	25	31	29	876
170,000	53	41	29	1132
250,000	79	45	29	1225
315,000	99	50	29	1364
370,000	116	45	29	1199

Left: Soybean yield by planting rate, indicating optimal planting range in gold. Above: Economic analysis of soybean seeding rates at Kingston, NY, in 2014. Yellow highlight indicates highest profit return by planting rate.



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 Questions? Feel free to contact us for more information about these experiments or to hear about our other research.
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