

UW On Farm Strip Tillage Soybean Trials 2018

Targeted Commercial Product or Application

Strip tillage for soybean in 15" and 30" row spacing will be evaluated and compared to no-till and/or chisel plow systems. Additionally, in-furrow or banded fertilizers will be evaluated among tillage systems to better understand soil and tillage system dynamics.

Project Summary

Strip tillage adoption has increased as a means to alleviate cold, compacted soils in continuous and rotated corn production systems. Soybean also has the ability to benefit from strip tillage; however, soybean yield response to strip till is less consistent than corn. We plan to evaluate various soybean strip tillage treatments in large field scale trials to determine if this tillage approach can increase yields over conventional or no-tillage. An investigation of soil properties associated with various tillage treatments will also be undertaken. We also plan to assess if using a standard strip till implement designed for 30" corn rows can benefit soybean planted in 15" rows.

Our objectives for this project are

1. To evaluate the effect of strip tillage on soybean stand establishment, growth, and yield
2. To compare a 30" strip till system versus no-till for soybean growth and yield in 15" and 30" rowed soybean
3. To compare strip tillage with and without the use of in-furrow or banded fertilizers
4. To develop Extension recommendations for the use of strip tillage for soybean production in WI

Personnel

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Protocol for 2018 Strip till Soybean Project UW Madison Agronomy Department



2018 goal

Our goal is to encourage enough participation across the state to provide soybean farmers in Wisconsin with useful data to guide them in making best management decisions. We hope to gather data from 10-15 fields total. Growers that can provide multiple fields are encouraged to participate.

We will consult with you to help identify the best treatments to try on your farm. Please consider treatments that you are personally interested in trying

2018 treatments

- Tillage
Pick two or three tillage treatments
 - Strip tillage (shank or cog)
 - No tillage
 - Conventional tillage
- Fertilizer
Pick two fertilizer application methods (all treatments must get equal fertilizer rate)
 - Surface broadcast
 - Deep banded with strip tiller
 - Banded with planter
- Row spacings
Pick two row spacings
 - 30"
 - 15"
 - Twin row.

The experimental design will be optimized to capture multiple environmental and field variables in each tillage/fertilizer/row spacing combination.

Candidate growers should have:

- An understanding and interest (enthusiasm!) in the project
- An understanding of our expectations of them and what we will do (Addendum 1)
- Equipment, technology, and expertise to plant and harvest the trial in a precise and timely fashion
- An understanding that data generated on their farm may be available to the public, and may be used in UW Extension presentations and publication in scientific journals

Criteria for selection of fields: (ranked in order of importance)

1. 5 acres or more (at least 350 ft length and 15 planter passes wide)
2. Mostly uniform soils, drainage, slope
3. Crop, tillage and fertilizer application history
4. Fields with recent grid soil sampling fertility data
5. Fields with previous yield history
6. No large historically wet areas, previous building sites, roads, internal fence line



Criteria to consider with randomized block design:

- Ability to harvest the entire width or a subsample of the width of one treatment combination. To assess this, please consider the row spacing, planted width, and the harvester header width

Addendum 1

Research agreement between growers and project coordinators

Grower's responsibilities i.e. what we expect from you:

Agree to be part of this field research project

Sharing of your knowledge of the field

Tillage prior to planting in either spring or fall using specified tillage treatments

Fertilize field using specified fertilization method

Plant soybean crop using specified row spacings.

Manage the crop for high yields

Apply herbicides for weed control

Restrict unnecessary wheel traffic in field

Treat entire field with the same pest management products, irrigation, or fertilizers

Keep field records on major input and management factors such as varieties and pest control

Properly calibrated yield monitors (weight and time delays) on combine

Harvest the research study so that data integrity is maintained

Transfer as-planted and harvest yield data to UW Bean Team

Contact us if you see anything that needs attention or have questions

UW Bean Team responsibilities i.e. what you can expect from us:

Pre-season visit to discuss the project

Pre-season site visit to identify area(s) to be used and discuss tillage methods

Pre-plant visit to discuss final planting plans and details

Scouting visits to the field throughout the season

Communication about status of project, crop condition, and answers to questions

Assistance with calibration of combine yield monitor

Assistance in downloading yield data from combine monitor or desktop application

Share the conclusions of our research with you

Winter meeting with all the cooperators to discuss the findings



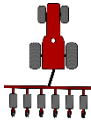
Addendum 2

Example field layout and considerations to determine suitability of grower equipment for tillage, planting and harvesting.

Plot		101	102	103	104	105	201	202	203	204	205	301	302	303	304	305	
Treatment		4	3	1	2	5	2	5	1	4	3	1	2	4	5	3	
Tillage		Strip	Strip	Strip	Strip	No-till	Strip	No-till	Strip	Strip	Strip	Strip	Strip	Strip	No-till	Strip	
Row Space		30"	15"	15"	30"	15"	30"	15"	15"	30"	15"	15"	30"	30"	15"	15"	
Fertilizer		Banded	Banded	Surface	Surface	Surface	Surface	Surface	Surface	Banded	Banded	Surface	Surface	Banded	Surface	Banded	
Track	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38



Tillage: Strip tillage is conducted using strip till units that till less than 30% of the total width of the planter. Most strip units till strips about 8-10" wide on 30" rows. Shank or cog/coulter strip till units can be used in the study. Strip tillage depth is dependent on the particular unit used, although typical depth for shank strip tillage units is 6 to 7", while coulter/cog strip tillage units maintain between 3" to 6". See following page for tillage and planting offsets from previous year's crop.

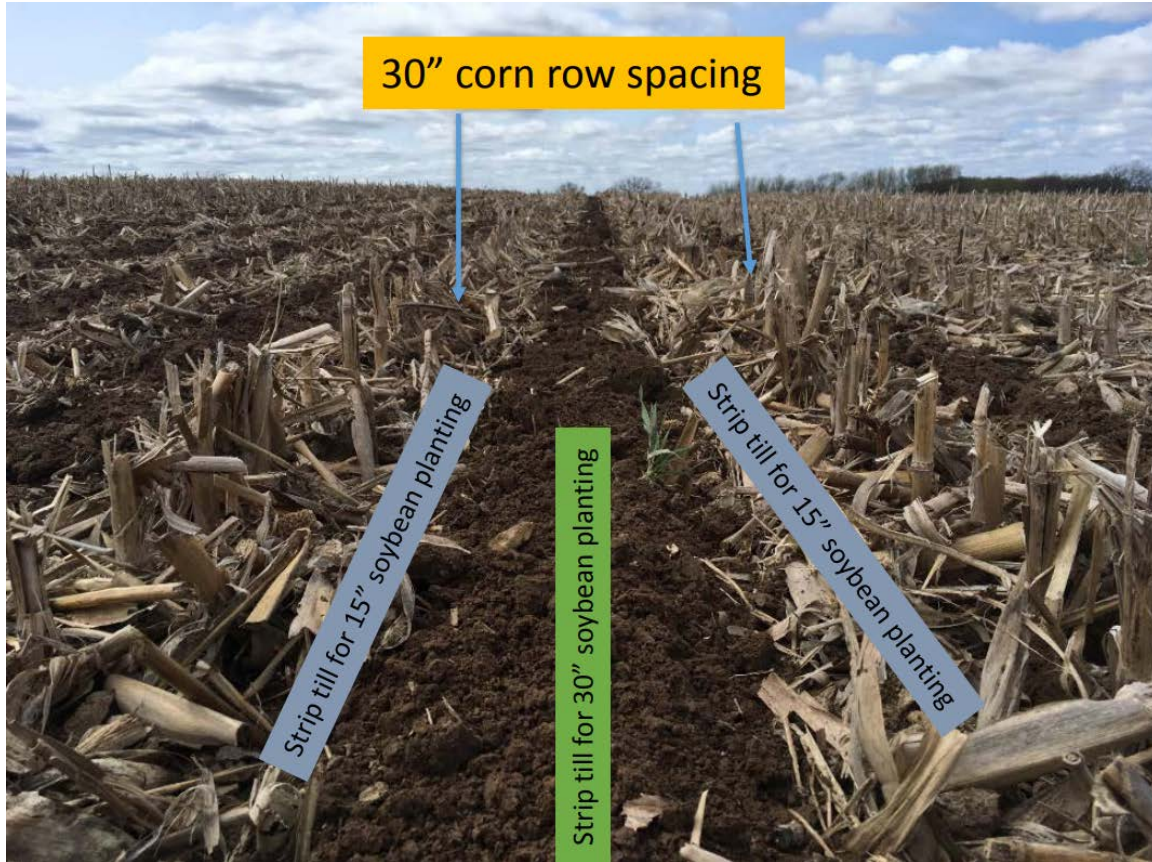


Planting: 30" Row spacings are planted directly over strip till rows. It is convenient, but not necessary to have a planter with equal row units as your strip till unit. 15" row spacings are planted with every other row planted directly over strip till. Twin rows are centered over strip till rows.

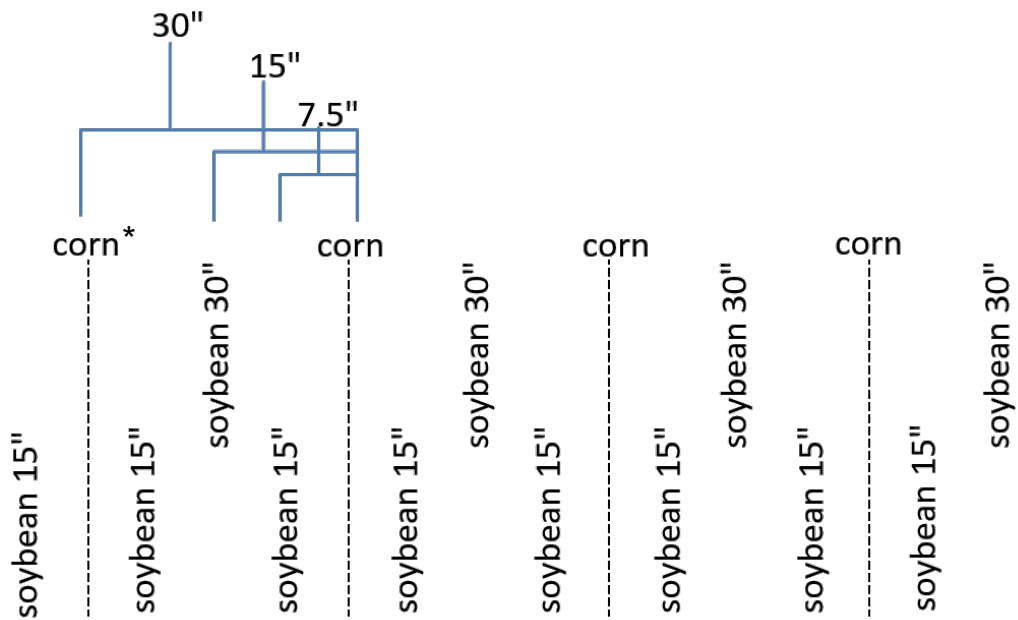


Harvesting: When combining, be sure to enter the harvest width of each swath in the combine monitor. If the combine head width is larger than the plot width, harvest the plots from an open end, being sure the row divider is able to separate plots adjacent to each other. If a combine header is narrower than the plot width, the combine can harvest the center most rows, being sure to record the harvest width and GPS location. Be sure to record grain weights and moisture at the end of each plot.

Tillage and planting offset example



Tillage and planting offset diagram



*represents previous crop's row



2018 STRIP TILL SOYBEAN RESEARCH FIELD INFORMATION FORM

GROWER INFORMATION

Farm Name _____
Grower Name _____
Address _____
City, State, Zip _____
County _____
Phone _____
E-mail _____

FIELD INFORMATION

County location of field _____
Township of field _____
GPS coordinates of field _____
Field name or number _____
Field size _____

CROPPING INFORMATION

2017 crop _____
Varieties planned _____
Planter rows/width _____

EQUIPMENT INFORMATION

Strip till unit (rows, type) _____
Planter (rows/width) _____
Combine header width _____
Combine yield monitor system _____

