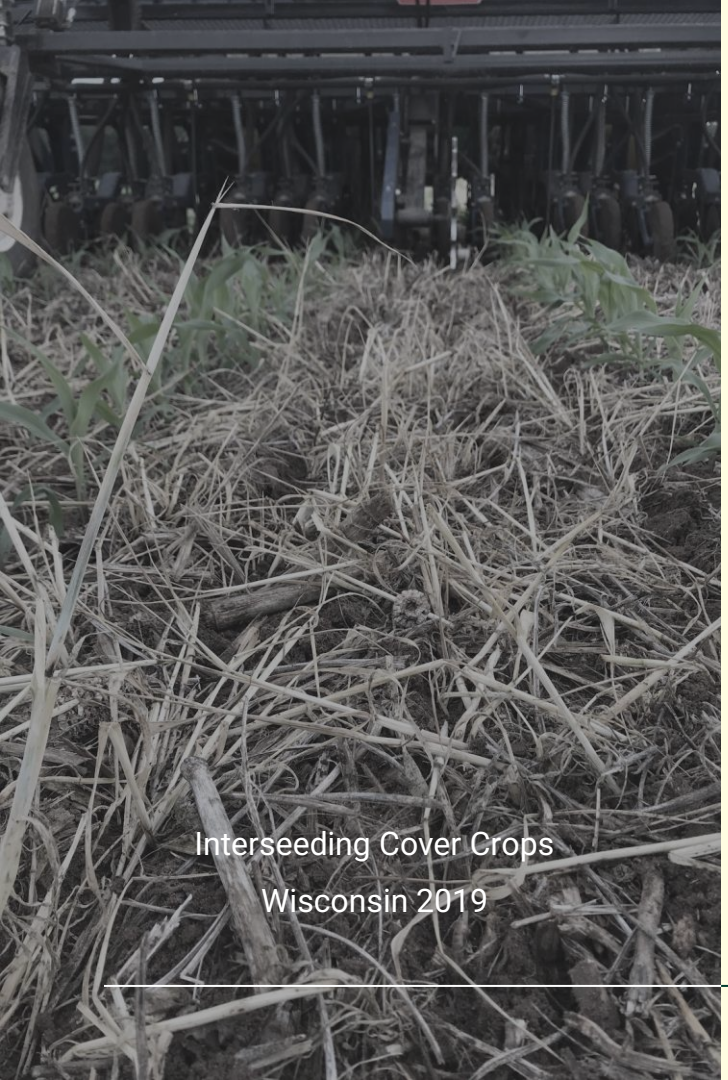
ILLINOIS SOYBEAN ASSOCIATION

Soil Water Outcomes Fund

Carbon Programs



Interseeding Cover Crops

Wisconsin 2019

Types of Programs

Carbon, Water, Biodiversity

What is a carbon offset – According to the US Government Accountability Office, a carbon offset is defined as a measurable reduction of GHG emissions from an activity or project in one location that is used to compensate for emissions occurring elsewhere. Carbon offsets are typically measured in metric tonnes (2,205 pounds) of carbon dioxide equivalent (CO2e).
According to the Corporate Credit Institute, one carbon credit gives the holder the right to emit one ton of carbon dioxide or an equivalent of another greenhouse gas.

What is a water quality credit – The EPA defines a water quality credit as a unit of pollutant reduction usually measured in pounds equivalent. Credits can be generated by industrial and municipal point sources implementing new treatment technologies or via implementation of management practices that improve water quality above an established baseline.
Illinois Sustainable Ag Partnership

Macropore

Illinois 2021

Types of Programs

Basis

Practices vs. Outcomes

Payment Amount and Basis
Process (model) based with sampling. Up to $20 per carbon credit generated, with a minimum price guarantee of $16.50/credit. Will match competitive price increase.
Payment based on validated practice implementation. $3 per acre for reduced tillage and $6 per acre for cover crop adoption ($9 for both)
Payment based on validated practice implementation. $20 per acre. Soon, CIBO will enable growers and enrollees to set the price of their own credits.
Depends on outcomes generated. Amounts are unclear.
Process (model) based. $20 floor on carbon credit for 2019 and 2020. However, farmer can retain credit and sell later if price increases above that level.

Verification

What's The Standard

There are currently no universal standards for measuring, reporting or verifying agricultural carbon credits.

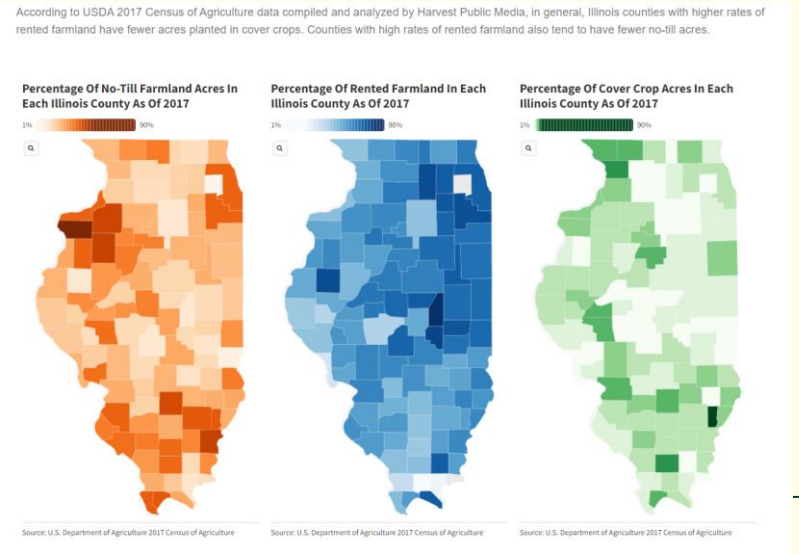
Third Party Practice Verification	Minimum once every 3 years; standard audit procedure (review representative sample of receipts and invoices)	Random site visits and evidence checks, registry-approved methodology.	Yearly field visits, remote sensing	Scope 1– small subset of producers randomly selected for site visit + remoting sensing. Scope 3 –smaller subset of producers randomly selected for site visit +remote sensing.

Soil Pit Demonstration

Stockton IL 2018

Who Benefits

Seller, Buyer, Broker & Verifier



Must Land Be Owned?
No, but renter must sign document saying they have control of land over the five-year contract period
No, but legal document showing renter has legal authority to sign contract must be submitted and verified by third party
No, but must have decision-making power over term of contract
No, but renters are required to provide an attestation of their right to market carbon on the property

Miss Applied Cover Crop

Peterson Farm 2021

Data

Who Owns The Data

Current & Historical

Rotation, Planting, Fertilizing, Irrigation…

Know what data is being collected!

Soil samples/physical verification

As applied maps

Aerial imagery

Data Ownership
Agoro Carbon does not own or sell any data collected and is subject to GDPR compliance.
Bayer does not share your data with third parties except in confidence for the purposes listed by the agreement. View Bayer's Privacy Policy.
View CIBO's Privacy Policy.
Producers own and have full access to their data which can be imported from other platforms. Data not shared without producer permission.
Does not sell personal data. Privacy details can be found here. FBN is certified Ag Data Transparent.

Data Collected on Enrollment	Farm operational data – previous 10 years OR proprietary "*Smart Defaults*" option	Basic farmer info, field boundaries, and commitment to new practice(s)	Farm operational data – 2-3 years historical baseline plus 2-3 years of proposed practice change(s)	Scope 1 – detailed farm operational data Scope 3 – some operational data; Soil sampling and remote sensed data for both.

Soybean Harvest

Illinois 2021

Payment

Amount, When, How

Contract length

Buyers

WHEN

Variability

When is Payment Made?
Incentive payments within 2 months of signing. Guaranteed annual payments based on carbon sequestration model estimates. Variable payments (based on verified carbon results) paid in three-yearly intervals.
Once carbon removal is quantified and verified. Typically fall of following year. Compensation is through Bayer PLUS Rewards account and can be redeemed for cash.
Credits can be sold each season, based on the verified practices implemented. CIBO pays the farmer while keeping 20% of the transaction fee.
Sometime after next harvest (Fall 2021)
60% of credits will be issued to the farmer over a five- year period. The farmer can decide when to sell these. The remaining 40% are retained to cover future carbon losses and administrative fees.

Questions to Ask

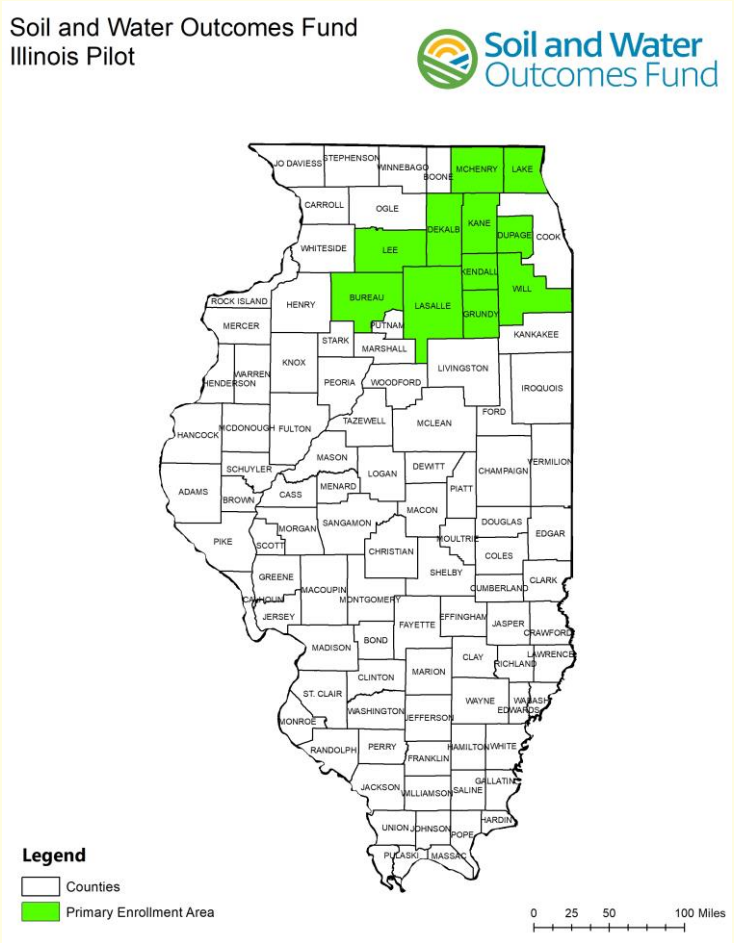
Pros vs. Cons

- ✓ Program
- ✓ Data
- ✓ Practices
- ✓ Payment

Iowa Soybean Association

Pilot 2021

New RCPP Grant


Soil and Water Outcomes Fund
Illinois Pilot
Soil and Water Outcomes Fund
JO DAVIESS
STEPHENSON
WINNEBAGO
BOONE
MCHENRY
LAKE
CARROLL
OGLE
DEKALB
KANE
DUPAGE
COOK
WHITESIDE
LEE
KENDALL
WILL
ROCK ISLAND
HENRY
BUREAU
LASALLE
GRUNDY
MERCER
PUTNAM
KANKAKEE
STARK
MARSHALL
KNOX
LIVINGSTON
WARREN
HENDERSON
PEORIA
WOODFORD
IROQUOIS
FORD
TAZEWELL
MCLEAN
HANCOCK
MCDONOUGH
FULTON
MASON
VERMILION
SCHUYLER
LOGAN
DEWITT
CHAMPAIGN
ADAMS
BROWN
CASS
MENARD
PIATT
MACON
DOUGLAS
EDGAR
MORGAN
SANGAMON
PIKE
SCOTT
CHRISTIAN
MOULTRIE
COLES
GREENE
SHELBY
CLARK
MACOUPIN
CUMBERLAND
CALHOUN
MONTGOMERY
JERSEY
FAYETTE
EFFINGHAM
JASPER
CRAWFORD
MADISON
BOND
CLAY
LAWRENCE
RICHLAND
MARION
CLINTON
ST. CLAIR
WAYNE
WABASH
EDWARDS
WASHINGTON
JEFFERSON
MONROE
RANDOLPH
PERRY
HAMILTON
WHITE
FRANKLIN
GALLATIN
JACKSON
WILLIAMSON
SALINE
UNION
JOHNSON
POPE
HARDIN
PULASKI
MASSAC
Legend
Counties
Primary Enrollment Area
0 25 50 100 Miles

Soil and Water Outcomes Fund

Carbon & Water Quality

Starting 2022

Start Small

TABLE 1: MARKET ENTITIES *As of February 2021*

	Nori	Indigo Ag	Soil & Water Outcomes	ESMC
Acreage Min/Max	None	One-field min, no max	None	None
Contract Length	10 yrs	5 yrs	Annual with yearly renewal	Pilot – Annual Market Launch – Scope 1: 10 yrs; Scope 3: TBD
New Practice Requirement	Yes, with a look-back of up to 5 years during pilot phase	Yes, with a look-back of 2 growing seasons	Yes	Yes, but investigating potential of payments to producers already implementing conservation practices for Scope 3
Payment Schedule	End of month when offset credit is sold	50% yr 1, 20% yr 2, 10% yrs 3, 4, 5	Annually, split 50/50–1 shortly after signing, 1 after verification	Pilot – Annual Market- Launch - Annual to every 5 yrs depending on Scope for carbon 1 vs 3, respectively; annual for water quality.
Ability to Enroll Same Fields in Gov't Programs/ Other Markets	Designed to stack with both	Designed to stack with both, but other incentives cannot include payments for carbon credits or related assets (financing is okay)	No Note – payment for water quality and carbon outcomes	Designed to stack with gov't programs; individual fields cannot be in two market programs. Note – ESMC internally stacks carbon with GHG reductions, water quality, and water quantity.
Outcome Estimation	Soil sample reference network-based modeling (Soil Metrics) - cost incurred by Nori. Farmer has option to true-up via soil sampling - farmer incurs sampling cost.	Modeling (biogeochemical and statistical) + soil sampling, Indigo assumes cost (Indigo does not charge growers for anything)	Modeling, with 10% of fields subject to in-field soil and water sampling at no cost to farmer	Modeling (peer reviewed biogeochemical model) + soil sampling. ESMC assumes costs and includes in asset price to buyers.
Third Party Practice Verification	Minimum once every 3 years; standard audit procedure (review representative sample of receipts and invoices)	Random site visits and evidence checks, registry-approved methodology.	Yearly field visits, remote sensing	Scope 1– small subset of producers randomly selected for site visit + remoting sensing. Scope 3 –smaller subset of producers randomly selected for site visit +remote sensing.
Data Collected on Enrollment	Farm operational data – previous 10 years OR proprietary "*Smart Defaults*" option	Basic farmer info, field boundaries, and commitment to new practice(s)	Farm operational data – 2-3 years historical baseline plus 2-3 years of proposed practice change(s)	Scope 1 – detailed farm operational data Scope 3 – some operational data; Soil sampling and remote sensed data for both.
Penalty for Temporary Break in Practice Implementation	Farmer commits to make best effort to retain C stocks; not bound to any practice plan; not liable for *force majeure* C losses.	Payment pauses until soil carbon returns to previous level. Methodology prevents credits from being overestimated.	Breach of contract, farmer would not receive payment	Stall in soil carbon gains requires initial gains to be realized before additional credit issuance/payment; no consequences for dropping out of pre-market launch pilots
Enrollment Assistance	Supply Account Managers on-call; regular training; direct assistance with enrollment process	Customer success hotline or webchat options	Provided via staff and affiliates	Producer's preferred advisor (e.g. conservation district staff, CCAs) can be trained to assist; option to import data from 3rd party platform
Technical / Agronomic Assistance	NA (but supply account managers include trained agronomists)	Free in-house agronomic guidance, supplemented with on-the-ground help	Free conservation agronomists on staff	Provided by ESMC's member organizations and partners (e.g. conservation district, CCAs, NGOs).

ILLINOIS SUSTAINABLE AG PARTNERSHIP

	Payment Amount and Basis	When is Payment Made?	Minimum Acreage Requirement	Data Requirement	Data Ownership	Can Early Adopters Participate?	Must Land Be Owned?	Who Pays for Monitoring?	Contract Length	Notes
indigo	Process (model) based with sampling. $10 per ton floor for 2020 on first carbon crop. Potential price of $15.	After results verified and Indigo sells credit, payments are made in 5 installments over 5 years (50% in year 1, 20% in year 2, and 10% in years 3, 4, and 5)..	150 acres	Must use software platform to map field boundaries and submit field management information. Historical data for the past 3 to 5 years must also be added.	Farmers own their data and can have it removed when they leave. Indigo is certified Ag Data Transparent	No	No, but renter must sign document saying they have control of land over the five-year contract period	Indigo	Five years, renewable up to 30 years for each field.	Practices include adding cover crops, diversifying rotation, reducing or eliminating tillage, and reducing fertilizer. Land cannot have been cleared in the past 10 years.
NORI	Process (model) based with sampling. Currently, $15 per credit fully payable to the farmer plus one unit of cryptocurrency called a NORI token in a restricted account for 10 years. The token can be sold back to NORI and has a floor price.	As NRT's are sold, suppliers are paid monthly. Nori currently uses first in/first out, so the oldest projects are listed first.	Recommended 1,000 or more acres during pilot stage, but smaller farms may aggregate	Must enter field boundaries, agronomic practices, and production information. Must be verified by Nori-approved third party.	Nori does not own your data or sell it.	Practices adopted within the past 10 years are eligible for up to five years of grandfathered NRT's.	No, but legal document showing renter has legal authority to sign contract must be submitted and verified by third party	Enrollee is responsible for third- party verification costs which could be $3,000 to $5,000 per project at the initial listing. Verification is required every 3 years and costs should decrease.	10 years for NRT issuance	Uses the commercialized version of the USDA greenhouse- gas, bluebook approved model to estimate changes based on adoption of practices. No upfront soil samples required. At the end of 10 years, a final audit is conducted.
Soil and Water Outcomes Fund	Process (model) based with sampling. Up to $40 per acre per year.	50% at time of signing and 50% after verification	None	Must report 2-3 years of baseline operational data plus 2-3 years of proposed practice changes. Outcomes Fund staff conduct field visits, monitoring, and evaluation.	Operating entities retain the rights to use the data for purposes related to operation of the Soil and Water Outcomes Fund.	Practices must be additive to current baseline. Evaluated on a field-by-field basis.	No, but must have decision-making power over term of contract	Soil and Water Outcomes Fund	One year with renewal	Cannot stack with government conservation payments
TRUTERRA	Mixture of modeling and soil sampling. $20 per ton.	Second half of 2021	None	Historical data must be provided, including three years prior to regenerative practice adoption. Annual data must also be reported.	Data belongs to grower.	Payments are made for carbon sequestered between 2018 and 2020 only. Changes made in 2021 and beyond are not eligible at this point for credits.	No, but renters are required to provide an attestation of their right to market carbon on the property	Truterra covers the cost of the soil samples.	20 years	

This information brought to you by Ohio soybean farmers and their checkoff.

OHIO SOYBEAN COUNCIL

Cover Crop Adaption in Illinois

Illinois has gotten wetter overall in the last century. Over the last 120 years, mean precipitation has increased by 5 to 20%, varying across the state, and the number of 2-inch rain days in Illinois has increased by 40% *AN ASSESSMENT OF THE IMPACTS OF CLIMATE CHANGE IN ILLINOIS*

Importance

Illinois NLRS Goals:

The strategy sets a long-term goal of reducing loads from Illinois for total phosphorus and total nitrogen by **45%**, with interim reduction goals of 15% nitrate-nitrogen and 25% total phosphorus by 2025.

01

Reducing Nutrient Loads

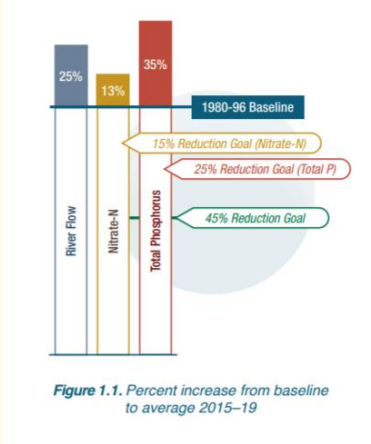


Figure 1.1. *Percent increase from baseline to average 2015–19*

02

Climate

Increasing Temperature

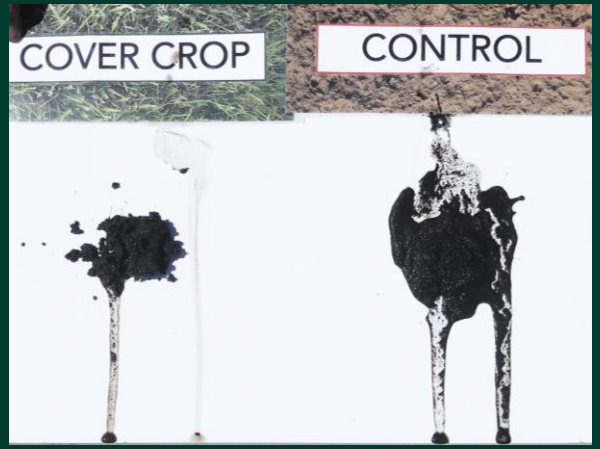
Changing Precipitation Patterns

Intensity of Weather Extremes

03

Loss

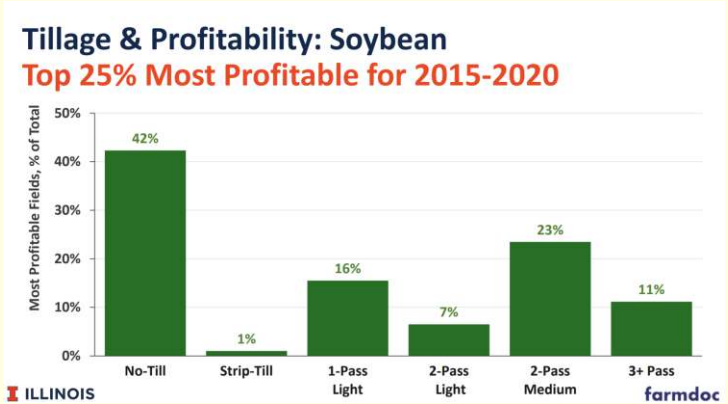
10 pounds of soybeans produced equals 14 lbs of soil washed away



Payment

Your Soil's ROI

Reduce erosion
Increase stability
Increase infiltration
Reverse stratification
Elevate compaction
Decrease disease incidence
Improve nutrient cycling
Help bind soil particles into aggregates
Tool for weed control
Fixation
Increase surface area
Increase organic matter
Develop beneficial mycorrhizal relationships
Stimulate microbials populations

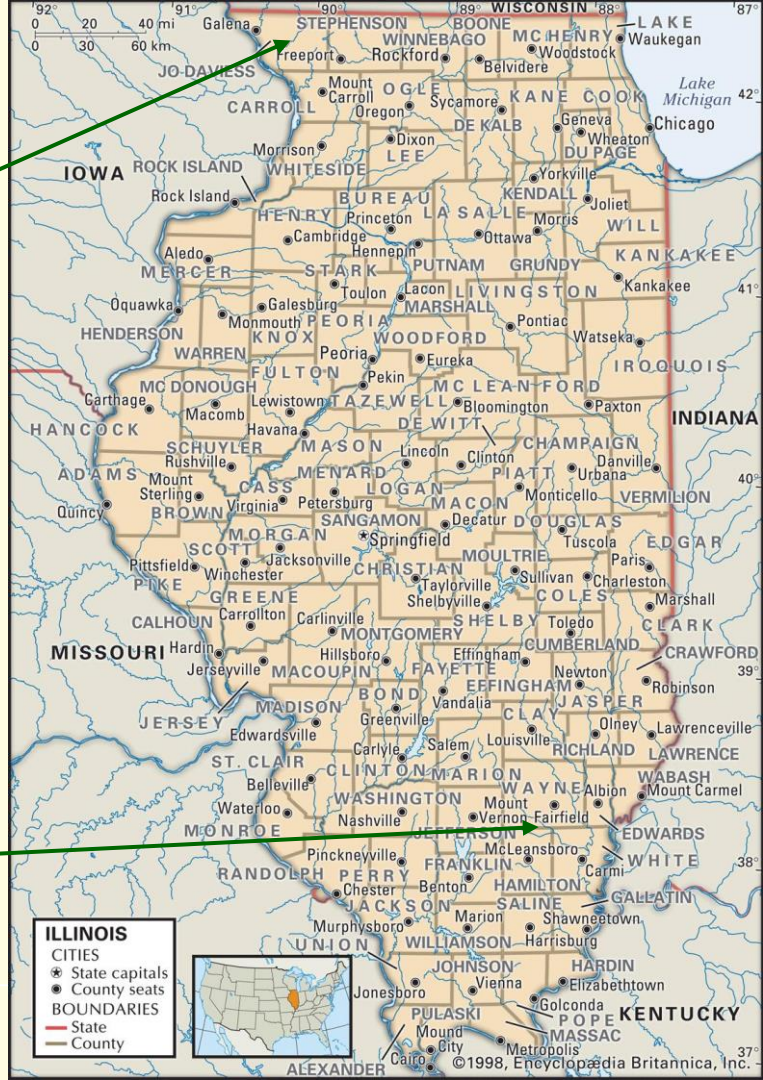


- Climate
- Soil Type
- Crop Rotation
- Rented (+50%)

North to South

September 17, 2021

May 10, 2019



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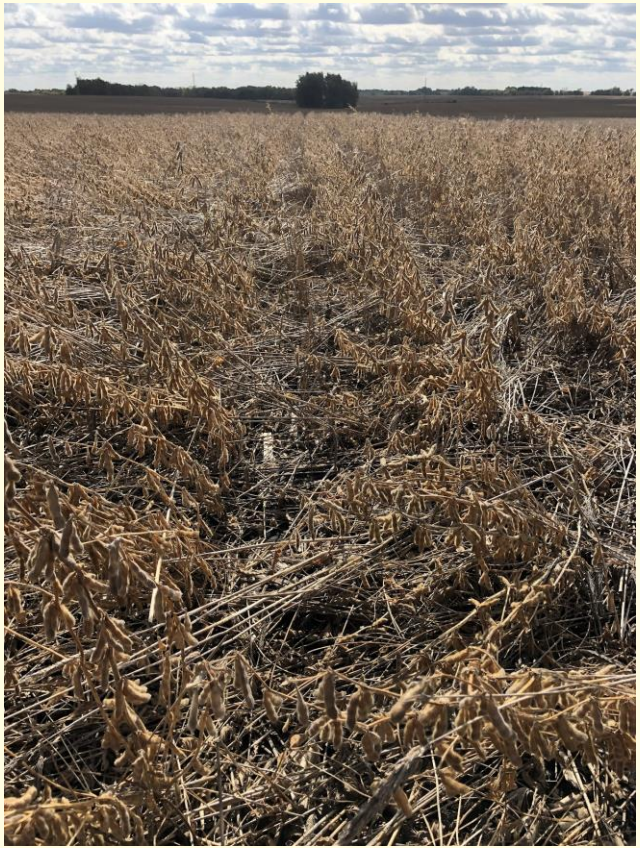

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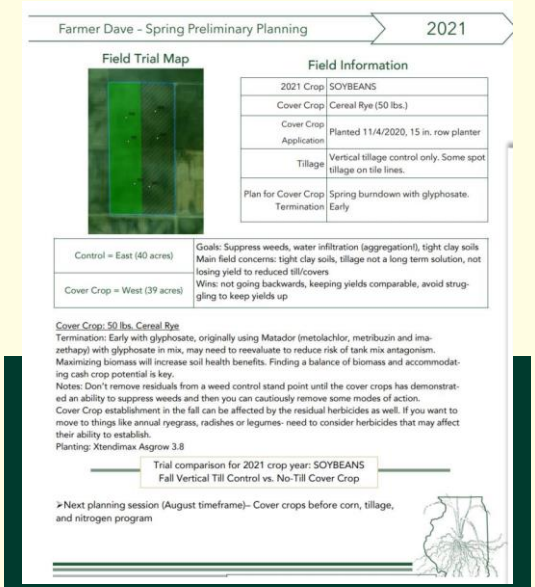
Photos: Kirk Kimble

ILLINOIS SOYBEAN ASSOCIATION

Plan

Goals
Field assessment
Herbicides
Cash crop rotation
Cash crop maturity
Weather
Application
Inputs
Tillage
Seed treatments
Species
IPM
Supply

TRANSITION



Farmer Dave - Spring Preliminary Planning 2021

Field Trial Map

Field Information

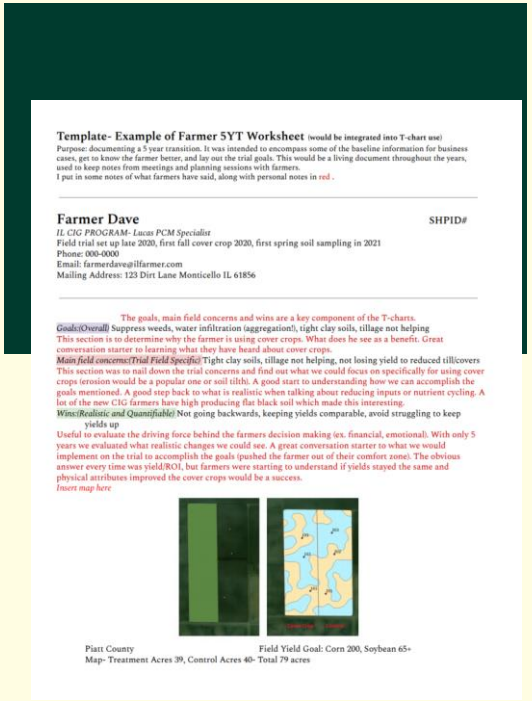
2021 Crop	SOYBEANS
Cover Crop	Cereal Rye (50 lbs.)
Cover Crop Application	Planted 11/4/2020, 15 in. row planter
Tillage	Vertical tillage control only. Some spot tillage on tile lines.
Plan for Cover Crop Termination	Spring burndown with glyphosate. Early

Control = East (40 acres)	Goals: Suppress weeds, water infiltration (aggregation!), tight clay soils Main field concerns: tight clay soils, tillage not a long term solution, not losing yield to reduced till/covers
Cover Crop = West (39 acres)	Wins: not going backwards, keeping yields comparable, avoid struggling to keep yields up

Cover Crop: 50 lbs. Cereal Rye
Termination: Early with glyphosate, originally using Matador (metolachlor, metribuzin and imazethapyr) with glyphosate in mix, may need to reevaluate to reduce risk of tank mix antagonism. Maximizing biomass will increase soil health benefits. Finding a balance of biomass and accommodating cash crop potential is key.
Notes: Don't remove residuals from a weed control stand point until the cover crops has demonstrated an ability to suppress weeds and then you can cautiously remove some modes of action.
Cover Crop establishment in the fall can be affected by the residual herbicides as well. If you want to move to things like annual ryegrass, radishes or legumes- need to consider herbicides that may affect their ability to establish.
Planting: Xtendimax Asgrow 3.8

Trial comparison for 2021 crop year: SOYBEANS
Fall Vertical Till Control vs. No-Till Cover Crop

➢Next planning session (August timeframe)– Cover crops before corn, tillage, and nitrogen program



Template- Example of Farmer 5YT Worksheet (would be integrated into T-chart use)

Purpose: documenting a 5 year transition. It was intended to encompass some of the baseline information for business cases, get to know the farmer better, and lay out the trial goals. This would be a living document throughout the years, used to keep notes from meetings and planning sessions with farmers.
I put in some notes of what farmers have said, along with personal notes in red .

Farmer Dave SHPID#

IL CIG PROGRAM- Lucas PCM Specialist
Field trial set up late 2020, first fall cover crop 2020, first spring soil sampling in 2021
Phone: 000-0000
Email: farmerdave@ilfarmer.com
Mailing Address: 123 Dirt Lane Monticello IL 61856

The goals, main field concerns and wins are a key component of the T-charts.
Goals:(Overall) Suppress weeds, water infiltration (aggregation!), tight clay soils, tillage not helping
This section is to determine why the farmer is using cover crops. What does he see as a benefit. Great conversation starter to learning what they have heard about cover crops.
Main field concerns:(Trial Field Specific) Tight clay soils, tillage not helping, not losing yield to reduced till/covers
This section was to nail down the trial concerns and find out what we could focus on specifically for using cover crops (erosion would be a popular one or soil tilth). A good start to understanding how we can accomplish the goals mentioned. A good step back to what is realistic when talking about reducing inputs or nutrient cycling. A lot of the new CIG farmers have high producing flat black soil which made this interesting.
Wins:(Realistic and Quantifiable) Not going backwards, keeping yields comparable, avoid struggling to keep yields up
Useful to evaluate the driving force behind the farmers decision making (ex. financial, emotional). With only 5 years we evaluated what realistic changes we could see. A great conversation starter to what we would implement on the trial to accomplish the goals (pushed the farmer out of their comfort zone). The obvious answer every time was yield/ROI, but farmers were starting to understand if yields stayed the same and physical attributes improved the cover crops would be a success.
Insert map here

Piatt County Field Yield Goal: Corn 200, Soybean 65+
Map- Treatment Acres 39, Control Acres 40- Total 79 acres

Illinois Programs

CSP January 7, 2022
EQIP January 7, 2022
PCM
Fall Covers for Spring Savings
Starting Dec. 15, 2021

Illinois Field Day 2021

Illinois Field Day 2021

Resources

Ohio Soybean Council
ISAP

Midwest Cover Crops Council
Kevin Bradley- University of MO
Karla Gage- SIU
Pete Fandel- ICC
Purdue- Annual Ryegrass

Corn Field 2021

Opportunities

ISAP
IL SOY Advisor
Nutrient Research & Education Council

Abigail Peterson

Director of Agronomy

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+815 973 2478

Website:
www.ilsoy.org

Thank You

ILLINOIS SOYBEAN ASSOCIATION