NORTH JERSEY RC&D
Resource Conservation & Development

Getting the Most Out of Cover Crops – Lessons Learned from Delayed Termination Strategies

Laura Tessieri, Executive Director

North Jersey Resource, Conservation & Development

We are a non-profit dedicated to community needs through conservation. North Jersey RC&D works throughout Sussex, Warren, Hunterdon, Morris, Somerset & Union County.

North Jersey RC&D has three areas of focus:

- IMPROVING AGRICULTURAL SUSTAINABILITY
- DEDICATED TO COMMUNITY NEEDS
- PROTECTING WATER RESOURCES

Learn more at: www.NorthJerseyRCD.org

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Innovative Strategies for Delayed Cover Crop Termination

PROJECT AIM

- Enable farmer-led research
- Remove barriers to entry
- Grow soil health impacts and adoption
- Assess impacts of three experimental cover crop termination treatments: *Planting Green, Roller Crimping and Grazing*

CONTROL PRACTICES

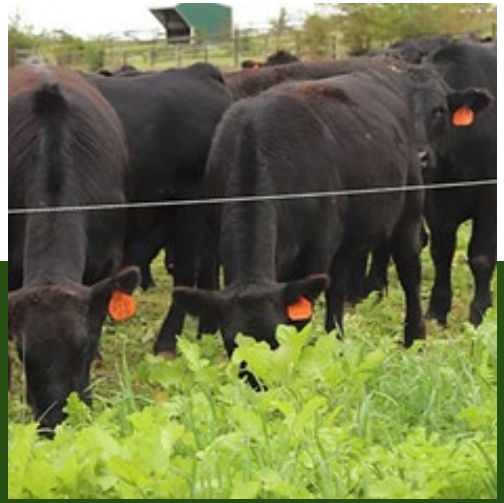
TILLAGE

HERBICIDE

TREATMENT PRACTICES

“PLANTING GREEN”
Planting into living cover crop

ROLLER CRIMPING
Mechanically crimping cover crop



GRAZING COVER CROP
Mechanically crushing cover crop

BENEFITS OF PLANTING GREEN

Planting green has agronomic and soil health benefits. By allowing cover crops to grow longer, farmers can take advantage of their soil health building traits.

PLANT EARLIER WHEN COVER CROPS CAN'T BE TERMINATED UNTIL LATER

A wet spring may prevent farmers from entering fields to terminate cover crops until later in the growing season. Having to wait an additional 2-3 weeks for the cover crops to die and dry out will push-back cash crop planting late into the year.

FIX MORE ATMOSPHERIC NITROGEN INTO THE SOIL

Cover crops selected for their ability to fix atmospheric nitrogen will fix substantially more when allowed to grow longer. Peak legume N2 fixation occurs after flowering, so delaying termination a few weeks can drastically increase nitrogen additions to the soil.

BUILD UP SOIL ORGANIC MATTER FASTER

Cover crop residues within a more mature vegetation have a higher C:N ratios, and are more resistant to decomposition. As these residues are incorporated into the soil and decompose, significant enhancements are seen to soil biological activity, biological diversity and potential soil carbon sequestration and soil organic matter gains.

BENEFITS OF PLANTING GREEN

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LESS DEER AND SLUG DAMAGE

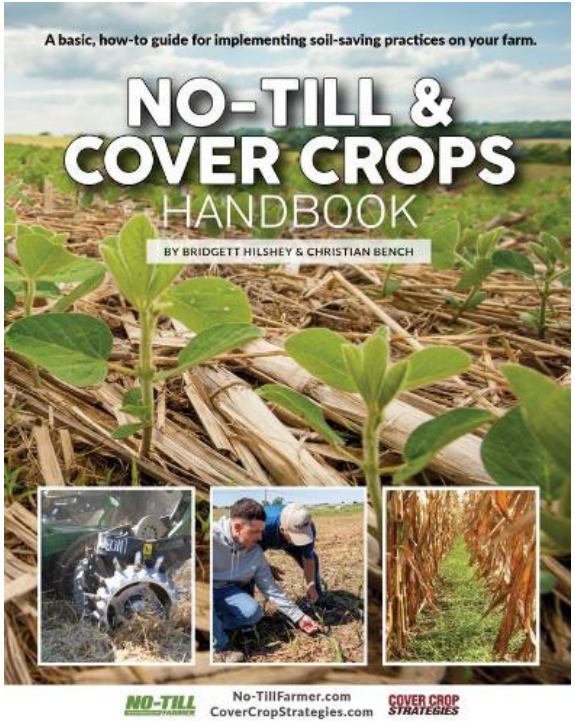
When planting green, the green cover crop residue may serve as a food source for pests like deer and slugs, reducing potential damage to cash crops.

REDUCE COMPACTION WHEN PLANTING

Actively growing cover crop can dry the soil faster during wet growing seasons. This allows farmers to enter fields earlier for planting and reducing the potential for compaction. Cover crop roots will grow deeper, increasing water infiltration and reducing soil compaction.

CREATE A THICK SOIL MULCH

Large mats of cover crop biomass on the soil surface cools the soil, improving soil moisture conservation and reducing plant transpiration during the growing season. The mulch can also reduce (or eliminate) the need for post emergence herbicide.



- **“An excellent guide for those transitioning to no-till and cover crops and as a training resource.”**
  — Barry Fisher, retired, Central Region Leader, Natural Resources Conservation Services (NRCS), Greencastle, Ind.

https://www.northjerseyrcd.org/notill-covercrop

PREPARING FOR RESEARCH TRIAL

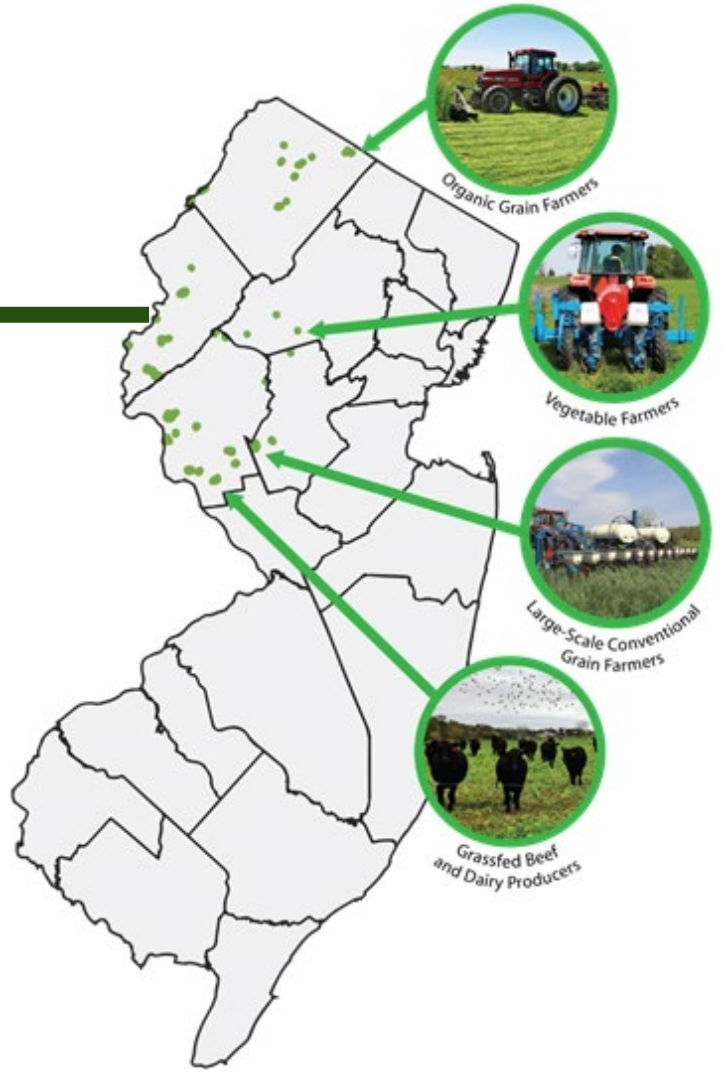
- **Program Advertised**
- **50 Farmers Applied**

Farmer incentives: participant stipends, compensation for risk, equipment budgets, free soil testing!

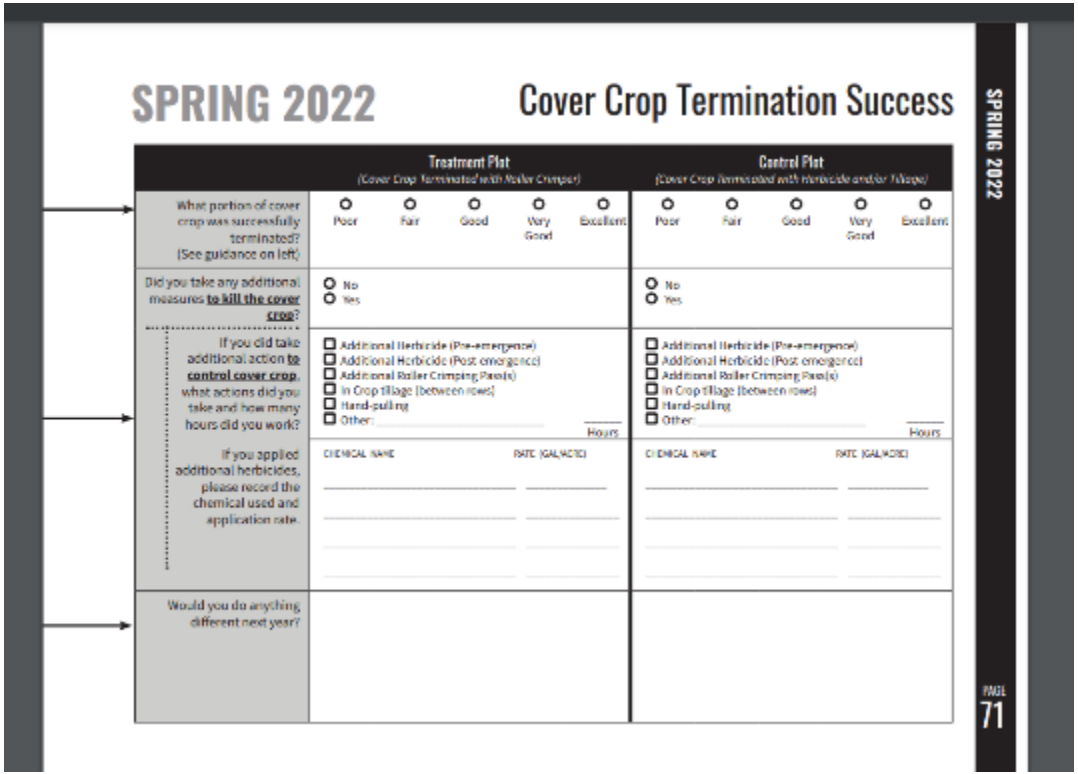
PREPARING FOR RESEARCH TRIAL

25 Farms Enrolled in the Project

- Farms in 5 New Jersey counties
- From large commodity crop farmers to organic farms
- Over 1500 acres of treatment fields
- Soil samples, field assessments, farm data, and farmer interviews/records



Farmers Provided Research Manual



SPRING 2022

Cover Crop Termination Success

	Treatment Plot (Cover Crop Terminated with Roller Crimper)	Control Plot (Cover Crop Terminated with Herbicide and/or Tillage)
What portion of cover crop was successfully terminated? (See guidance on left)	○ Poor ○ Fair ○ Good ○ Very Good ○ Excellent	○ Poor ○ Fair ○ Good ○ Very Good ○ Excellent
Did you take any additional measures **to kill the cover crop**?	○ No ○ Yes	○ No ○ Yes
If you did take additional action **to control cover crop**, what actions did you take and how many hours did you work?	☐ Additional Herbicide (Pre-emergence) ☐ Additional Herbicide (Post emergence) ☐ Additional Roller Crimping Pass(s) ☐ In Crop Tillage (between rows) ☐ Hand-pulling ☐ Other: _____ Hours	☐ Additional Herbicide (Pre-emergence) ☐ Additional Herbicide (Post emergence) ☐ Additional Roller Crimping Pass(s) ☐ In Crop Tillage (between rows) ☐ Hand-pulling ☐ Other: _____ Hours
If you applied additional herbicides, please record the chemical used and application rate.	CHEMICAL NAME _____ RATE (GAL/ACRE) _____	CHEMICAL NAME _____ RATE (GAL/ACRE) _____
Would you do anything different next year?		

SPRING 2022

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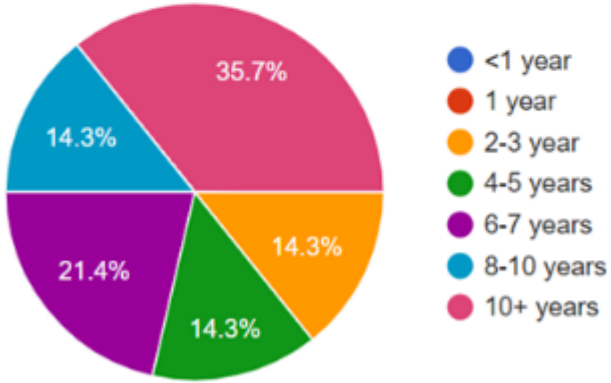
Farmers Completed Survey

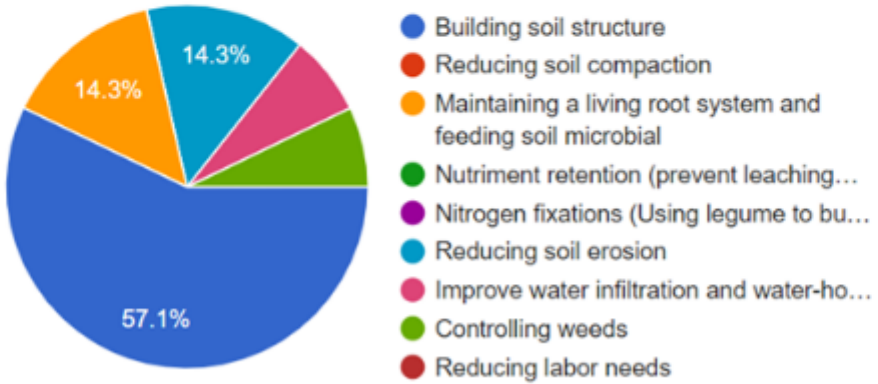
Cover Crop Management Use History (survey)

How many years of experience do you have with cover crops?



Perceptions of Cover Crops (survey)

What is your primary motivation for using cover crop?



Farmers Purchased Equipment

Farmers assigned incentive budgets based on practices implemented and number of acres enrolled

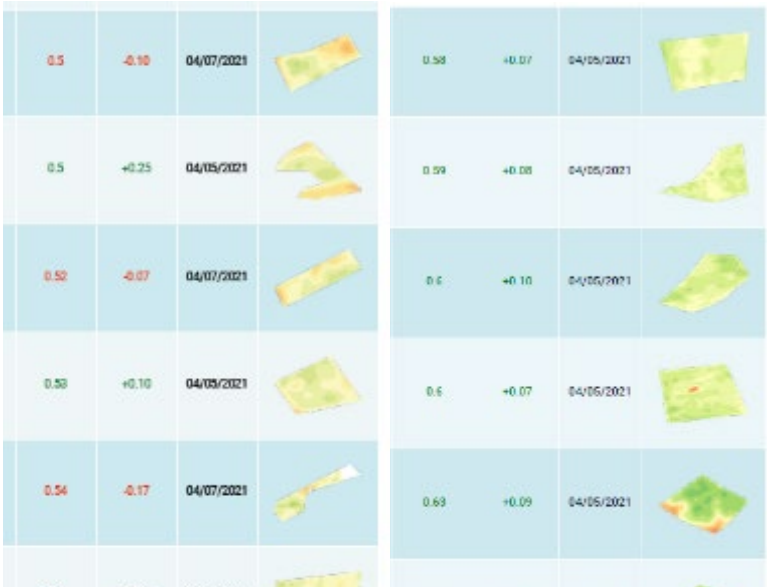
Most common purchases included:

- Roller-crimper components (independent and planter mounted)
- Row cleaners
- Closing wheels
- Disc openers
- GPS systems
- Fence (temporary and permanent)

NJRCD collected baseline soils data

Collecting soil samples for analysis using the Cornell Comprehensive Soil Health Test

Use satellite imagery to evaluate field equivalency and monitor cover crop growth



YOU TUBE FARMER TESTIMONIALS

In-field Results


What we saw in the field….
DRY PLANTING CONDITIONS

What we saw in the field….

CONTROL AND TREATMENT VERY DIFFERENT

What we saw in the field….
CONTROL AND TREATMENT VERY DIFFERENT

What we saw in the field. ..

CONTROL AND TREATMENT VERY DIFFERENT

What we saw in the field….

ROLLER CRIMPING IN LATE MAY WAS TOO EARLY

What we saw in the field….

ROLLER CRIMPING SUCCESSFUL IN EARLY -JUNE

What we saw in the field….

PLANTERS WENT THROUGH HEAVY RESIDUE WELL

What we saw in the field….

PLANTERS WENT THROUGH HEAVY RESIDUE WELL

(Even 1-row!)

What we saw in the field….

CROPS EMERGED WELL THROUGH RESIDUES


What we saw in the field….
NO COVER CROP RESIDUES IN CONTROL

What we saw in the field….

PLANTING GREEN CAN BE BEAUTIFUL!

What we saw in the field….

FIELD WORK CAN BE SPECTACULAR!

YOU TUBE FARMER TESTIMONIALS

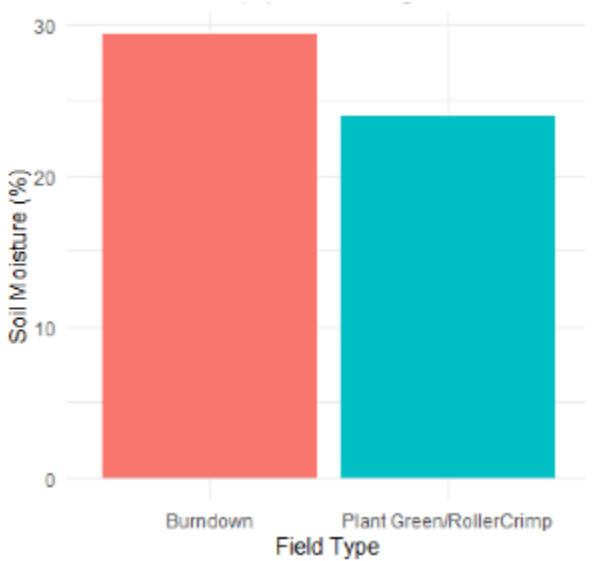
Observations:

- Financial assistance and technical support reduced risk to farmers, allowing farmers to implement conservation practices they otherwise might not have
- Second year of study allowed farmers to see practice benefits more clearly
    - * Practices can save *time* in the long-run, save on field passes
    - * Practices can save on *herbicide applications*
- Despite a learning curve, the vast majority of participants plan to continue with the practice.

Findings:

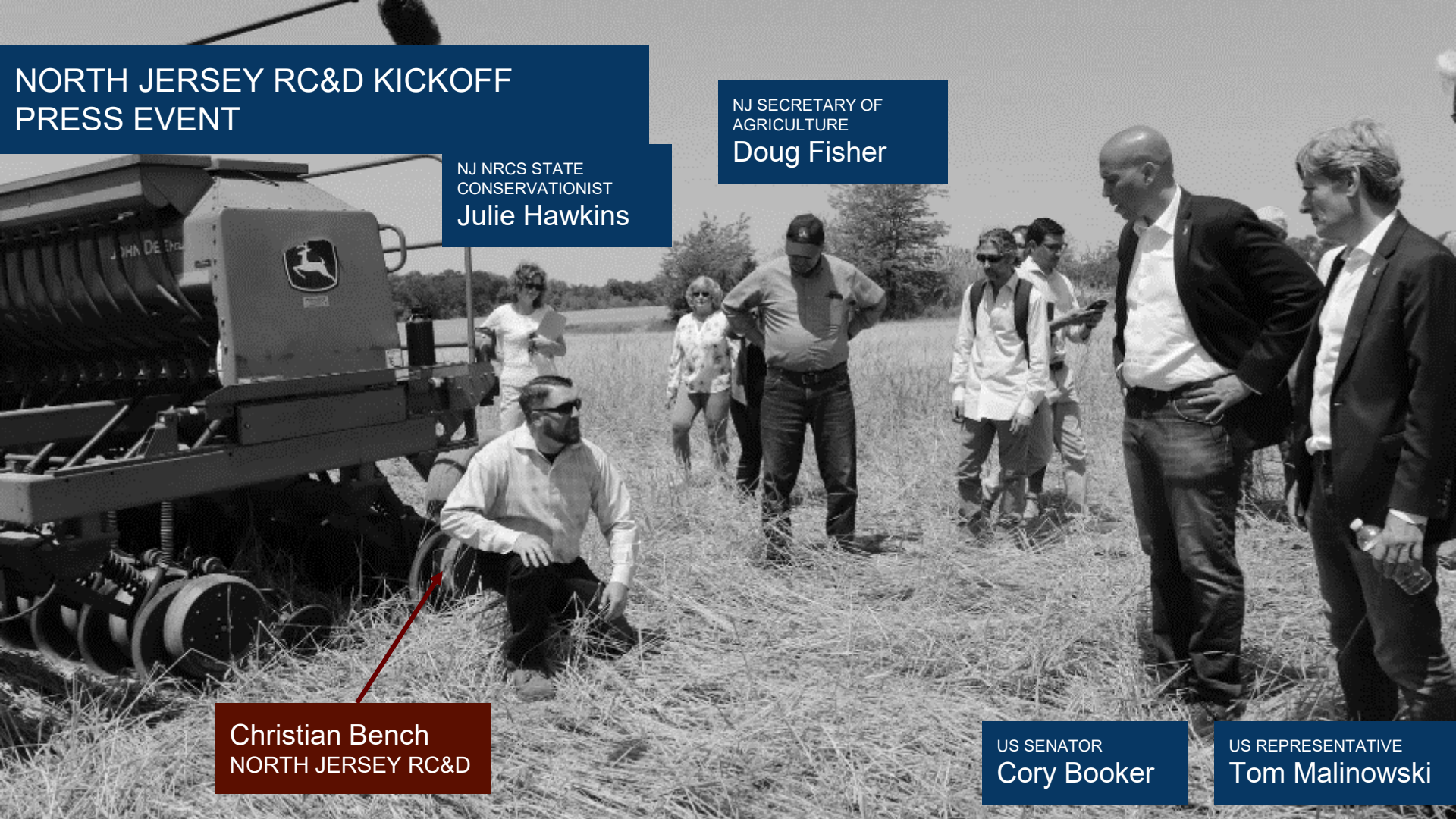
- Yields were not statistically different between control and treatment, but treatment fields *trended* higher by 8% on average
- Soil moisture at planting was significantly more dry (23.9%) in the treatment fields
- Soil moisture after planting was not statistically different but treatment fields trended wetter than control
- Soil temperatures at surface was not statistically significant
- Soil temperature at 3" after planting not statistically different but treatment fields trended cooler

Soil Moisture at Planting (3" depth)



Highlights

NORTH JERSEY RC&D KICKOFF PRESS EVENT 5/21/21


NORTH JERSEY RC&D KICKOFF PRESS EVENT
NJ NRCS STATE CONSERVATIONIST
Julie Hawkins
NJ SECRETARY OF AGRICULTURE
Doug Fisher
Christian Bench
NORTH JERSEY RC&D
US SENATOR
Cory Booker
US REPRESENTATIVE
Tom Malinowski

PLANTING GREEN SCENARIO DEVELOPED

New Jersey GSPS Scenarios
Updated 4.5.2023

Code	Practice	Scenario Name	Unit	Standard Rate ($)	HU Rate ($)	Type
329	Residue and Tillage Management, No-Till	Planting Green GSPS NJ	Acre	61.46	73.75	New
		This scenario applies to cropland where residue and tillage management prepares the field for "planting green" techniques where cash crops are planted into living cover crop residues. This practice is based on economic and social data obtained from the North Jersey RC&D On-Farm Trials Soil Health Demo CIG Project results. This scenario involves the site preparation and management of live cover crop residues during no-till planting events. The practice will be used to drastically reduce soil erosion, reduce CO2 losses from the field, maximize the four principles of soil health and related resource concerns, mitigate pesticide usage and amplify the benefits of supporting practices. The typical scenario size is 100 acres.				

NEW JERSEY NO-TILL & COVER CROP CONFERENCE

Thursday, September 7, 2023 | Hawk Pointe Golf Club, Washington Township, Warren County, NJ

SCHEDULE OF EVENTS

8 a.m. — Registration Opens

8 - 9 a.m. — Breakfast and Exhibitor Networking
- Seed Dealers - Crop Consultants - Non-Profit - USDA agencies -

9 a.m. — Welcome and Introductory Remarks

9:15 - 10 a.m. — Intercropping Cash Crops and Exploring Regenerative Agriculture

Jason Mauck works to create more regenerative solutions to produce and share food, energy and nutrients. Jason farms 3,000 acres of corn, soybeans and wheat, in addition to 25,000 hogs per year and he will share how-tos and his observations of better weed control, good yields, higher returns per acre and improved hog manure retention.

Speaker Jason Mauck, Constant Canopy

10 - 10:45 a.m. — Integrated Pest Management and Soil Health (Slugs and Beetles)

Dr. John Tooker, Professor of Entomology and extension specialist at The Pennsylvania State University, will share his expertise on slugs and other pest management in no-till and cover cropping systems and how cover crops are more effective than insecticides for managing pests.

Speaker Dr. John Tooker, Professor at PSU

10:45 - 11 a.m. — Break

11 - 11:30 a.m. — RC&D On Farm Trial Soil Health Research
Planting Green, Roller Crimping, and Grazing

11:30 - 12:15 p.m. — Conversations with On Farm Trial Farmers

12:15 - 1:30 p.m. — Hot Buffet Lunch

1:30 - 2:15 p.m. — Breakout Sessions

Select one of three classrooms to absorb more specialized learning

- **Livestock Integration** — Jason Mauck, Constant Canopy
- **Breaking up Pest Cycles with Crop Rotation** — Eric Rosenbaum, Rosetree Consultant
- **No-Till and Cover Cropping in Organic Systems** — Sara Mamat, Rodale Institute

2:20 - 3 p.m. — Realities of Implementation and Equipment Retrofits

Christian Bench (NRCS), Marc Yoder, and more!

3 - 3:30 p.m. — Ask an Expert: Q&A Sessions with Leaders in No-Till and Cover Crop

3:30 - 4:30 p.m. — Exhibitor Networking with Hors d'oeuvers and Optional Cash Bar

NORTH JERSEY RC&D

No-Till & Cover Crop Resources for Farmers

NRCS Planting Green Practice Scenario

No-Till & Cover Crop Manual

AgAssist Commitment (Equipment Cost-Share)

NJ RC&D On Farm Trial

Benefits of No-Till Farming with Cover Crops - YouTube Videos

Lancaster Farming Article on NJ Delayed Cover Crop Termination

https://www.northjerseyrcd.org/notill-covercrop

Thank you!

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