

Illinois Report -2020
Midwest Cover Crops Council, Kansas City, MO
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Research:

University of Illinois Extension & Crop Sciences

Field-scale drainage research, U of I Dudley Smith Farm, Pana, IL. Comparing current nitrogen and crop management with cover crops and no nitrogen check evaluating their impacts on water quality & crop production. (Pittelkow, Christianson, Bhattarai)

Cover cropping, tillage, and buffer strip usage effects on phosphorus movement in the soil. (L. Christianson, R. Christianson, T. Becker)

Evaluating Conservation Practices for Nutrient Loss Reduction. (Gentry & David)

- 1) Evaluating the impact on cover crops, wood chip bioreactors, in a strip-till/no-till corn – soybean – wheat rotation on nutrient loss through tile drainage.
- 2) Evaluating tile nitrate load reduction using cereal rye after corn and oat/radish after soybean in a corn/soybean rotation for past 3 years
- 3) Evaluating cereal rye in continuous corn under three termination times and 3 N systems differing in the timing of fertilizer N application

Evaluation of Cover Crops and No-Till Production Practices for Fresh Market Tomatoes & Peppers (Johanning) Illinois Department of Agriculture – Specialty Crop Block Grant

This project compares conventional tillage production systems (bareground and plasticulture to no-till cover crop systems, with and with out a cereal rye cover crop in tomato and pepper production.

Insect Management in Cover Crop Systems (Seiter)

This project focuses on developing initial insect pest management recommendations for systems that include a cover crop. It takes advantage of existing cover crop experiments being funded by the Illinois Nutrient Research and Education Council (NREC), and looks at the effect on insect populations of both long-term rotations that incorporate a cover crop and the timing of cover crop termination in corn and soybean. In addition, this project funds a M.S. student in Crop Sciences.

Pest and Beneficial Insects in Illinois Cover Crops (Seiter)

This project focuses on characterizing the pest and beneficial insect complex in cover crop systems, as well as developing sampling recommendations for producers that utilize a cover crop. Intensive sampling of commercial fields will be combined with in-field workshops and production of a training video with the goal of improving the adoption of insect monitoring in these systems.

Southern Illinois University Carbondale - Dr. Karla Gage (Weed Science)

- 1) Two-year, multi-state, Horseweed Management: Determine the impact that selective chemical and cultural weed management practices have on suppressing horseweed emergence, development, and growth prior to establishment of a soybean crop under no-till conditions.
- **USDA-NIFA**
 - i. Year 2 of research
 - ii. These techniques include fall-sown cover crops and herbicide applications regionally appropriate in no-till corn and soybean rotation.
 - iii. Collaboration with University of Kentucky, University of Missouri, and Kansas State University.
- 2) Two-year, multi-state, Cover Crop Interference with Residual Herbicides: Determine Potential for Cover Crop Residue to Interfere with Soil Residual Herbicides in Soybean. - **USB**
 - i. Year 2 of research
 - ii. Develop recommendations for the best performing residual herbicides in cover crop systems.
 - iii. Collaboration with University of Missouri, Purdue University, University of Arkansas, Mississippi State, University of Illinois, and University of Tennessee.
- 3) Two-year Warrant Herbicide for Control of Early Emerging Summer Annual Weeds in Cereal Rye. - **Bayer**
 - i. Year 1 of research
 - ii. Evaluate various rates and early application timings of Warrant herbicide in standing and rolled cereal rye.
- 4) The Efficacy of Cover Crops for Pollinator Habitat Provisions and Weed Suppression in a Southern Illinois Agroecosystem. - **USDA/Dept. of Interior**
- 5) Effect of Intercropping Winter Wheat with Soybean on Soybean Growth and Weed Control: - **Internal**
 - i. Year 1 of graduate student research (Madison Decker)
 - ii. Interseeding winter wheat in soybean with an herbicide program for integrated weed management for the suppression of common waterhemp.
 - iii. Refine the implementation of interseeding winter wheat in soybean in Southern Illinois. (Madison Decker)
 - iv. Evaluating various winter wheat planting dates, winter wheat termination dates, and herbicide options.

Extension & Outreach

- Many Cover Crop Field Days and programs throughout the state working with many organizations including University of Illinois Extension, SIU, ISU, Local SWCD, NRCS, Illinois Stewardship Alliance, American Farmland Trust, Illinois Sustainable Ag Partnership, SARE, Soil Health Partnership.
 - Travis Meeter, University of Illinois Extension hosted 5 programs on cover crops for Livestock reaching over 125 participants across the state.
 - Illinois Department of Agriculture hosted their annual Conservation Cropping Seminars held this past January in 3 locations (Mt. Vernon, Bloomington, Rochelle).
 - IL SARE will be providing 5-6 cover crop demonstration grants this year for education and research around the state

Illinois Sustainable Ag Partnership

- Coordination across several organizations – Illinois Central College, Illinois Corn, Zea Mays, American Farmland Trust, Soil Health Partnership, Extension
- Hosts Advanced Soil Health Training Courses. 60 trainees have either gone through, or are going through currently, and another cohort will begin this summer in NW IL. Trainees are farmers, agronomists, retailers, seed salesmen, conservation staff, farm managers...people that have the ability to influence others and acres beyond their own!
- American Farmland Trust hosts monthly Cover Crop Specialist calls, providing opportunities for field staff from across the state to learn from researchers, share updates, ask questions, and connect with others. A total of 67 participants were reached in 2019.
- Research and Demonstration plots – herbicide residual trials, planting date trials, species plots, water quality monitoring
- Network of Cover Crop Specialists across the state
- Illinois specific cover crop management guidance documents and resources

Publications (peer-reviewed/Extension):

Kim, N., M. C. Zabaloy, K. Guan, and M.B. Villamil. 2020. Do cover crops benefit soil microbiome? A meta-analysis of current research. *Soil Biology and Biochemistry* 142:1-14. <https://doi.org/10.1016/j.soilbio.2019.107701>

Bryan, C., Schoonover, J., Sipes, S., Kassim, L., Gibson, D., Scott, D., and Gage, K. 2019. Cover crop benefits to pollinators and the agroecosystem. Southern Illinois University Carbondale. https://opensiuc.lib.siu.edu/psas_articles/85

W. T. Meeter, *Quick Guide to Cover Crops for Forage*, University of Illinois Extension

Post Corn, Going to Soybean: Use Cereal Rye (Illinois Cover Crop Recipe series, MCCC-105), available from www.mccc.msu.edu

Post Soybean, Going to Corn: Use Oats/Radish (Illinois Cover Crop Recipe series, MCCC-106), available from www.mccc.msu.edu

Conservation Cropping System for Corn-Bean No-Till (American Farmland Trust Publication)

Conservation Cropping System for Corn-Bean Till (American Farmland Trust Publication)

Conservation Cropping System for Corn-Bean Livestock (American Farmland Trust Publication)

Conservation Cropping System for Organic Transition (American Farmland Trust Publication)

Adoption of Cover Crops in Illinois

The combined efforts organizations in Illinois in promoting the use of cover crops, has resulted in a significant increase in the adoption of cover crops by farmers in Illinois.

- The Census of Agriculture showed an increase in cover crop adoption from 318,636 acres in 2012 to 708,105 in 2017
- In 2019, the “Seed Fall Cover Crops for Spring Savings” program rolled out providing qualifying cover crop acres the opportunity to gain a \$5.00/acre reward on your crop insurance premium. This program was for up to 50,000 acres in 2019 and applications came in for more than 130,000 acres. This program will continue in 2020 and 2021 with 100,000 and 200,000 acres funded, respectively.

Contributors:

American Farmland Trust

Illinois Central College

Illinois Sustainable Ag Partnership

Soil Health Partnership

Southern Illinois University Carbondale

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