

MCCC Soybeans and Cover Crops

Research Recommendations and Priorities

The Midwest Cover Crops Council (MCCC) project team was funded under the North Central Soybean Research Program (NCSRP) project Understanding Cover Crop Use in Soybean Production Systems. The team reviewed and compiled information from literature, a survey of farmers and CCAs/agronomists, and farmer interviews about cover crop use in soybean production. That information is available in *Integrating Cover Crops in Soybean Rotations: Challenges and Recommendations for the North Central Region*.

In the survey, we asked farmers and CCAs/agronomists to list research topics that could help reduce the challenges to, or improve the performance of, using cover crops in soybean rotations. Based on the survey results and our own observations, the project team identified and prioritized these future research topics.

Our research recommendations and priorities are:

Priority 1: Improving Cover Crop Selection and Establishment

The farmers and CCAs/agronomists we surveyed indicated that **establishing cover crops** is a top challenge to using covers in soybean systems.

Research in this area should:

- Evaluate different cover crop species/cultivars/genotypes-within-species/mixes and their performance in soybean rotations in different climates and geographic areas
- Evaluate combinations of planting date, planting method, and species/mixtures to determine their effects on cover crop establishment and performance before and after soybeans
- Develop cover crop varieties with improved attributes (i.e., optimal maturity, quick germination, quick growth, winter hardiness, cold tolerance, shade tolerance, drought tolerance, etc.)

Priority 2: Improving Cover Crop Planting Methods

The farmers and CCAs/agronomists we surveyed indicated that **the time/labor required for planting and increased management** is another top challenge to using cover in soybean systems.

Research in this area should:

- Compare existing planting methods and possible improvements
- Evaluate interseeding/broadcast methods into standing cash crops (i.e., aerial, highboy, etc.)
- Develop new planting methods/technology and seed treatments



Priority 3: Determining Cover Crop Economics

A consistent desire from both the farmers and CCAs/agronomists we surveyed was the need for a better understanding of **the economics of using cover crops** in soybean systems.

Research in this area should:

- Gather long-term data for economic analyses (i.e., yields, yield stability, resilience, input costs, water use, return on investment, etc.)
- Determine the value/costs of soil health (organic matter, soil erosion, nutrient loss, compaction, etc.)
- Analyze and model the economics of cover crops in soybean rotations
- Develop cover crop economic decision tools

Priority 4: Improving Cover Crop Termination

While **the difficulty of terminating cover crops** was not rated highly by either the farmers or CCAs/agronomists we surveyed, many indicated a need for more research in this area.

Research in this area should:

- Quantify the soybean herbicide carryover effects on cover crops
- Evaluate and improve cover crop termination methods

Priority 5: Confirming Benefits

In our survey, farmers and CCAs/agronomists indicated the benefits they look for in cover crops. Survey respondents indicated the need for **a better understanding and quantification of cover crop benefits**.

Research in this area should:

- Quantify the long-term benefits of cover crop use in soybean rotations on weed control, soil health, nutrient cycling, compaction, water holding capacity, and climate resilience

Other Recommendations

Additional consideration should be given to multi-state or regional projects that contribute to cover crop knowledge across larger geographic areas and that can be used to improve selection tools such as the MCCC Cover Crop Decision Tool and the *Midwest Cover Crops Field Guide*.

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