

AN NCR-SARE COVER CROP PROJECT: FARMER-COOPERATOR MOTIVATION AND AGRONOMIC PRACTICES



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ABSTRACT

The purpose of this study was to gain a better understanding of what motivates farmers to participate in cover crop projects, specifically Rural Advantage's NCR-SARE cover crop project, and to identify the major cover crop agronomic practices used. The study concluded that the primary motivator was assisting in cover crop research and the cover crop agronomic practices used for establishment and termination could be considered mainstream farming practices. Interest in alternative methods was expressed. Implications of the study include: cover crop education and outreach is needed, encourage use of cover crops after early harvested cash crops, and encourage use of alternative establishment methods.

INTRODUCTION

In fall 2009, Practical Farmers of Iowa (PFI) and Rural Advantage were awarded a North Central Region – Sustainable Agriculture Research and Education (NCR-SARE) grant for their project titled, "Farmer Field School Approach to Increasing Cover Crop Adoption in Iowa and Minnesota" (NCR-SARE cover crop project). The project was designed to increase the adoption of cover crops in Iowa and Minnesota by increasing awareness and knowledge of cover crops, increasing interaction between resource people and farmers, increasing the number of farmer experiences with cover crops, and improving each state's Cover Crop Decision Tool (CCDT). The project involved education /outreach efforts and 20 on-farm demonstration sites per state. The Minnesota farmer-cooperators were chosen on a first-come-first-serve basis, but geographical disbursement and demonstration aspects were also determining factors. Each farmer-cooperator received a cost-share amount of up to \$20 per acre for up to 20 acres, as well as an additional participation payment of \$500; the maximum payment received by any one farmer-cooperator was \$900 for 20 acres. All farmer-cooperators were allowed to participate for one year. Similar programs are being offered around the nation. Program administrators and funders need to look closely at the effectiveness of their efforts. This information can be compiled by obtaining specific data from the farmer-cooperators involved with these cover crop programs.

METHODS AND PROCEDURES

The target population for the study were the farmer-cooperators from Rural Advantage's portion of the NCR-SARE cover crop project. At the time of this study, there were 17 farmer-cooperators from around the state (Figure 1). Dillman's (1978) Total Design Survey Method was used to develop a written survey consisting of 23 questions (Figure 2). Question format included: yes/no or agree/disagree, open-ended, short-answer, multiple choice, ranking, and Likert scale. There was a 100% survey return rate. Survey responses with incomplete data were not considered part of the overall population. Questions left blank were considered non-responses and were considered part of the overall population. Response means, percentages, and number of farmer-cooperators with specific answers were calculated during analysis.

RESULTS

Research Question 1: What motivates farmers to become farmer-cooperators in cover crop projects?

- 47.1% of survey participants indicated the main reason for using cover crops was to reduce soil erosion. Building soil health/organic matter (41.1%) and weed control (23.5%) were also prevalent answers.
- Three main concerns about using cover crops were cost, water usage, and establishment/germination, all at 17.6%.
- Farmer-cooperators were asked why they participated in the NCR-SARE cover crop project. Usable results (N=10) showed, "wanted to help with cover crop research in Minnesota" and "ability to get cover crop information and answers," as the top motivators. See Table 1.
- 11.8% of the farmer-cooperators (N=17) agreed with the statement, "I would not have used cover crops without receiving the cost-share funding through Rural Advantage's NCR-SARE cover crop project." All were first time users.
- 31.3% of the population (N=16) said the NCR-SARE cover crop project's cost-share rate of \$20 per acre was a sufficient amount to get more farmers to use cover crops.

	First Reason		Second Reason		Third Reason		Fourth Reason	
	f	%	f	%	f	%	f	%
Monetary assistance from cost-share (N=10)	0	0.0	1	10.0	6	60.0	3	30.0
Ability to get cover crop information and answers (N=10)	4	40.0	4	40.0	2	20.0	0	0.0
Wanted to help with cover crop research in Minnesota (N=10)	4	40.0	5	50.0	1	10.0	0	0.0
Other (N=10)	3	30.0	0	0.0	0	0.0	7	70.0

Note: There was one survey with no response and six surveys with incomplete data for this question. Abbreviations: f is frequency, % is percentage.

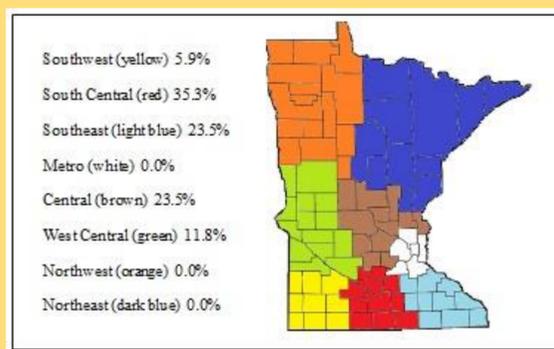


Figure 1: Minnesota regions and participants.

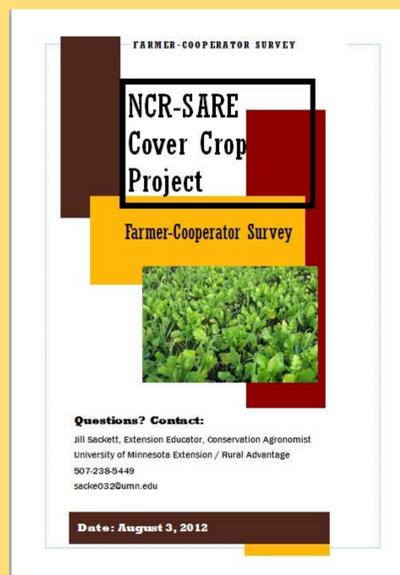


Figure 2: Front cover of written survey.

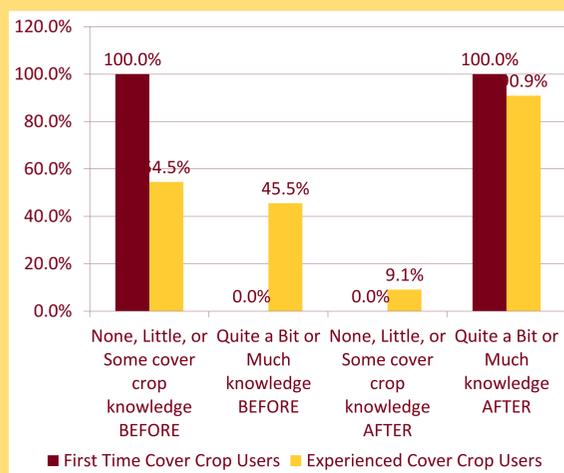


Figure 3: Comparison of knowledge before and after participation in the NCR-SARE cover crop project. Note: Two surveys in the AFTER category had incomplete data.

Research Question 2: To what extent do farmer-cooperators continue to use cover crops after involvement in a cover crop project?

- 64.7% the population (N=17) had used cover crops prior to participating in the NCR-SARE cover crop project.
- 76.5% of the population (N=17) agreed with the statement, "I would have used cover crops without taking part in Rural Advantage's NCR-SARE cover crop project." Of the 23.5% that disagreed with the statement, all were first time users.
- A Likert scale question asked the population (N=15) how successful their cover crop experiences have been; the majority answered either "mostly" (40.0%) or "very" successful (40.0%). A second Likert scale question asked how pleased the population (N=17) was with the NCR-SARE cover crop project. 100% of the farmer-cooperators answered "mostly" (47.1%) or "very" pleased (52.9%). See Table 2.
- 100% of the survey population (N=17) agreed with the statement, "I plan to continue using cover crops in the future."

	Not at All		Somewhat		Half the Time		Mostly		Very	
	f	%	f	%	f	%	f	%	f	%
How successful have your cover crop experiences been? (N=15)	0	0.0	2	13.3	1	6.7	6	40.0	6	40.0
How pleased were you with the NCR-SARE cover crop project? (N=17)	0	0.0	0	0.0	0	0.0	8	47.1	9	52.9

Note: Two surveys had incomplete data for the experiences question. Abbreviations: f is frequency, % is percentage.

Research Question 3: To what extent does participation in a cover crop project affect farmer knowledge of cover crops?

- The study population (N=17) was asked to rank their cover crop knowledge prior to participation in the NCR-SARE cover crop project. The response of "none" (11.8%), "little" (17.6%), or "some" (41.2%) knowledge was given by 70.6% of the farmer-cooperators. Analysis showed 100.0% of the first time cover crop users (N=6) and 54.5% of the experienced cover crop users (N=11) answered thus.
- When asked to rank their knowledge after participation, 93.4% of the population (N=15) answered "quite a bit" or "much" knowledge. Analysis showed that 100.0% of the first time cover crop users (N=4) and 90.9% of the experienced cover crop users answered "quite a bit" or "much" knowledge. See Figure 2.
- Results showed an increase in knowledge for 73.3% of the farmer-cooperators (N=15).

Research Question 4: To what extent was the educational Minnesota Cover Crop Decision Tool used by the farmer-cooperators?

- 41.2% of the population (N=17) used the Minnesota Cover Crop Decision Tool (CCDT). First time cover crop users (N=6) showed more use of the CCDT at 66.7%.

Research Question 5: What agronomic practices are being used by farmer-cooperators in cover crop projects?

- Results (N=17) show that cover crops were most likely to be planted after a small grain crop (41.2%), a canning crop (17.6%), or soybeans (17.6%). The majority (70.6%) of the cash crops (small grains, sweet corn, peas, and corn silage) can be considered to have an early harvest date (approximately the first week of September at the latest).
- The most prevalent establishment methods were the use of either a grain drill (64.7%) or a broadcast spreader (58.8%) after cash crop harvest. See Table 3. Interest in alternative methods was expressed.
- Non-legumes, brassicas, legumes, and mixes had all been used as cover crops by the farmer-cooperators. Winter rye was the most prevalently used (47.1%), followed by oats (29.4%) and tillage radish (17.6%). If taken as a whole, mixes had a 23.5% user frequency and all included a legume.
- The farmer-cooperators' preferred termination method for cover crops was tillage (82.4%) followed by herbicide use (41.2%) and winter/frost kill (35.3%).

	Drill after cash crop		Broadcast after cash crop		Broadcast into cash crop		Aerial into cash crop		High-clearance vehicle into cash crop	
	f	%	f	%	f	%	f	%	f	%
Which establishment methods have you used for cover crops? (N=17)	11	64.7	10	58.8	0	0.0	1	5.9	0	0.0

Note: Participants could choose more than one method. Abbreviations: f is frequency, % is percentage.