

Iowa Cover Crops Survey

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Economics
478E Heady Hall
518 Farmhouse Lane
Ames, Iowa 50011-1054

Dear Operator:

Incorporating cover crops into a commercial farming operation has become a recommended practice. Have you ever stopped to consider what is the return on investment (ROI) of those cover crops?

This survey is part of an NCR-SARE's Research and Education project developed by Iowa State University (ISU) and Practical Farmers of Iowa (PFI) to measure the ROI for the adoption of cover crops in Iowa row crop farms. This survey is funded through ISU's Center for Agricultural and Rural Development (CARD).

Your response is voluntary but cooperation is critical to developing an accurate measure of the impacts of adopting the use of cover crops. The results of this survey will be publicly available through the NRCS-SARE, ISU, and PFI websites. Facts about your farm operation will be kept confidential and used only for statistical purposes in combination with data from the other respondents. Title 7, U.S. Code, Section 2276 prohibits public disclosure of personal information, including reported data.

Please use your farm records to provide the best estimates of your true costs, revenues, and management practices. If a response is not received, a representative will contact you to collect your data.

Your cooperation is sincerely appreciated. If you have any questions about the survey, please do not hesitate to contact me.

Sincerely,

A. Plastina, PhD
Extension Economist and Principal Investigator
(515) 294-6160 — plastina@iastate.edu

Section 1. Basic Information

1. What is the size of your farm? (Please circle one number)

- | | | | |
|-----------------------|---|----------------------------|---|
| 1 to 49 acres.....001 | 1 | 500 to 999 acres | 5 |
| 50 to 99 acres..... | 2 | 1,000 to 1,999 acres | 6 |
| 100 to 199 acres..... | 3 | 2,000 acres or more | 7 |
| 200 to 499 acres..... | 4 | | |

2. Have you ever planted a cover crop? (Please circle one number)

- Yes..... 002 1 → *Continue*
- No..... 2 → *Go to Section 7.*

3. How many years have you planted cover crops until January 2016? 003 _____ Years

4. Which is the most recent year when you planted cover crops prior to 2016? 004 _____

5. How many cumulative acres have you planted to cover crops until January 2016 since you first started this practice?

005 _____ Acres

Please answer all following questions thinking of the farm where you planted cover crops in the most recent year entered in item 4. If you planted cover crops in more than one farm, please refer to the farm with the most accurate production records. For consistency, refer always to the **SAME FARM** throughout the survey.

6. What county is this farm located in? County: 006 _____

7. What was your most extensively used cover crop or cover crop mix on this farm? (Please circle one number)

- | | | |
|--|-----|----|
| Cereal rye..... | 007 | 1 |
| Cereal rye + oats | | 2 |
| Annual ryegrass | | 3 |
| Annual ryegrass + crimson clover | | 4 |
| Annual ryegrass + crimson clover + oilseed radish..... | | 5 |
| Annual ryegrass + crimson clover + oilseed radish + rapeseed | | 6 |
| Oats + oilseed radish + buckwheat | | 7 |
| Oats + oilseed radish + buckwheat + crimson clover..... | | 8 |
| Oats +oilseed radish + turnip..... | | 9 |
| Crimson clover + oilseed radish | | 10 |
| Crimson clover + oilseed radish + buckwheat | | 11 |
| Hairy vetch..... | | 12 |
| Other: _____ | | 13 |

Section 2. Cover Crop Planting

Please answer the following questions focusing only on your experience with the cover crop or cover crop mix chosen in Section 1 for the most recent year prior to 2016.

1. How many acres were planted to this cover crop? ⁰⁰⁸ _____ Acres

2. What was your cost per acre for the cover crop seeds? ⁰⁰⁹ \$ _____/Acre

3. Did you hire custom work for planting cover crops? (Please circle one number)

Yes, for all acres..... ⁰¹⁰ 1 → **Continue**

Yes, for some acres 2 → Percent of acres ⁰¹¹ _____% → **Continue**

No 3 → **Go to item 5.**

4. What was the predominant custom planting method you hired and how much did you pay per acre to plant the cover crops with this method? (Please circle one number)

			<u>Cost per Acre</u> ⁰¹³
Aerial seeding..... ⁰¹²	1	→	\$ _____
Broadcast seeding	2	→	\$ _____
Drilling	3	→	\$ _____
Other planting method: _____	4	→	\$ _____

If you planted all your cover crops with hired custom work go to Section 3. Otherwise, please continue.

5. What machinery did you use to plant cover crops?

5.1 Power machinery (Please circle one)

2-wheel drive or mechanical front wheel drive tractor:

30-49 HP..... ⁰¹⁴ 1
 50-69 HP..... 2
 70-89 HP..... 3
 90-119 HP..... 4
 120-149 HP..... 5
 150-179 HP..... 6
 180-219 HP..... 7
 220 and over HP..... 8

4-wheel drive tractor:

200-289 HP..... 9
 290-339 HP..... 10
 340-399 HP 11
 400 and over HP 12
Other types:
 Tracked Crawler Tractor 350 HP 13
 Other: _____ .. 14

5.2 Planting machinery (Please circle one)

Row Crop Planter ... ⁰¹⁵ 1 → Width ⁰¹⁶ _____ Rows
 Min-Till Planter 2 → Width ⁰¹⁷ _____ Rows
 Potato Planter..... 3 → Width ⁰¹⁸ _____ Rows
 Beet Planter 4 → Width ⁰¹⁹ _____ Rows
 No-Till Drill 5 → Width ⁰²⁰ _____ Feet
 Press Wheel Drill 6 → Width ⁰²¹ _____ Feet
 Drill, Other 7 → Width ⁰²² _____ Feet
 Air Seeder Drill w/ cart.. 8
 Other: _____ .. 9

Section 3. Cover Crop Termination

Please answer the following questions focusing only on your experience with the cover crop or cover crop mix chosen in Section 1 for the most recent year prior to 2016.

1. What was the primary method used to terminate your cover crop? (Please circle one number)

- Herbicide 023 1 → **Go to Section 3a.**
- Tillage 2 → **Go to Section 3b.**
- Mowing 3 → **Go to Section 3c.**
- Winter kill..... 4 → **Go to Section 4.**
- Other: _____ .. 5 → **Continue**

2. What was your termination cost per acre? 024 \$ _____/Acre → Go to Section 4.

Section 3a. Termination with Herbicides

1. How much did you spend on herbicides to terminate your cover crop? 025 \$ _____/Acre

2. Did you hire custom work for terminating your cover crops with herbicides? (Please circle one number)

- Yes, for all acres..... 026 1 → **Continue**
- Yes, for some acres 2 → Percent of acres 027 _____% → **Continue**
- No 3 → **Go to item 4.**

3. How much did you pay for hiring custom work to terminate your cover crops with herbicides (including fuel, labor, etc. but excluding herbicide costs)? 028 \$ _____/Acre

If you terminated all your cover crops with hired custom work, go to Section 4. Otherwise, please continue.

4. What machinery did you use to terminate your cover crops with herbicides on the non-custom hired acres?

4.1 Power machinery (Please circle one number)

<u>2-wheel drive or mechanical front wheel drive tractor:</u>		<u>4-wheel drive tractor:</u>	
30-49 HP..... 029	1	200-289 HP.....	9
50-69 HP.....	2	290-339 HP.....	10
70-89 HP.....	3	340-399 HP	11
90-119 HP.....	4	400 and over HP.....	12
120-149 HP.....	5	<u>Other types:</u>	
150-179 HP.....	6	Tracked Crawler Tractor 350 HP	13
180-219 HP.....	7	Other: _____.....	14
220 and over HP.....	8		

4.2 Spraying machinery (Please circle one number)

Sprayer, Boom-Type 030	1	Sprayer, Air Carrier.....	4
Hooded Sprayer	2	Spray Tank & Boom.....	5
Spray Buggy.....	3	Other: _____.....	6

5. Did terminating cover crops with herbicides require more expenses or unpaid labor hours than applying herbicides in spring to your acres without cover crops? (Please circle one number)

- Yes 031 1 → *Continue*
 No 2 → *Go to item 7.*

6. Additional labor hours/Acre: 032 _____ Additional expenses: 033 \$ _____/Acre

7. Please circle one number in each line:

	<u>Yes</u>	<u>No</u>
I only applied herbicide to my acres with cover crops 034	1	2
All my acres were under cover crops 035	1	2

Go to Section 4.

Section 3b. Termination with Tillage

1. Did you hire custom work for terminating your cover crops with tillage? (Please circle one number)

- Yes, for all acres..... 036 1 → *Continue*
 Yes, for some acres 2 → Percent of acres 037 _____% → *Continue*
 No 3 → *Go to item 3.*

2. How much did you pay for hiring custom work to terminate your cover crops with tillage (including fuel, etc.)? 038 \$ _____/Acre

If you terminated all your cover crops with hired custom work, go to Section 4. Otherwise, please continue.

3. What machinery did you use to terminate your cover crops with tillage in the non-custom hired acres?

3.1 Power machinery (Please circle one number)

<u>2-wheel drive or mechanical front wheel drive tractor:</u>		<u>4-wheel drive tractor:</u>	
30-49 HP..... 039 1		200-289 HP.....	9
50-69 HP..... 2		290-339 HP.....	10
70-89 HP..... 3		340-399 HP.....	11
90-119 HP..... 4		400 and over HP.....	12
120-149 HP..... 5		<u>Other types:</u>	
150-179 HP..... 6		Tracked Crawler Tractor 350 HP.....	13
180-219 HP..... 7		Other: _____.....	14
220 and over HP..... 8			

3.2 Tillage machinery (Please circle one number)

Spring Tooth Harrow..... 040 1 Spike Tooth Harrow 2 Rotary Tiller 3
 Row Crop Cultivator..... 4 Roller Packer 5

Chisel Plow 6 → Width..... 041 _____ Feet
 Disk Plow..... 7 → Width..... 042 _____ Feet
 Mold-Board Plow Bottom 8 → Number of Bottoms .. 043 _____ Bottoms
 Offset Disk..... 9 → Width..... 044 _____ Feet
 Tandem Disk 10 → Width..... 045 _____ Feet
 Vertical Tillage Tool..... 11 → Width..... 046 _____ Feet
 Roller Harrow 12 → Width..... 047 _____ Feet
 Field Cultivator..... 13 → Width..... 048 _____ Feet
 Field Cultivator-Incorporator .. 14 → Width..... 049 _____ Feet
 Disk, Field Cultivator 15 → Width..... 050 _____ Feet
 Disk & V-Ripper 16 → Width..... 051 _____ Feet
 Other: _____ 17

4. Did tilling one acre with cover crops require more expenses or unpaid labor hours than tilling one acre without cover crops? (Please circle one number)

Yes 052 1 → **Continue**
 No 2 → **Go to item 6.**

5. Additional labor hours/Acre: 053 _____ **Additional expenses:** 054 \$ _____/Acre

6. Please circle one number in each line:

	<u>Yes</u>	<u>No</u>
I only tilled my acres with cover crops 055	1	2
All my acres were under cover crops 056	1	2

Go to Section 4.

Section 3c. Termination by Mowing

1. Did you hire custom work for terminating your cover crops by mowing? (Please circle one number)

Yes, for all acres..... 057 1 → **Continue**
 Yes, for some acres 2 → Percent of acres 058 _____% → **Continue**
 No 3 → **Go to item 3.**

2. How much did you pay for hiring custom work to terminate your cover crops by mowing (including fuel, etc.)? 059 \$ _____/Acre

If you terminated all your cover crops with hired custom work, go to Section 4. Otherwise, please continue.

3. What machinery did you use to terminate your cover crops by mowing in the non-custom hired acres?

3.1 Power machinery (Please circle one number)

<u>2-wheel drive or mechanical front wheel drive tractor:</u>		<u>4-wheel drive tractor:</u>	
30-49 HP..... 060	1	200-289 HP.....	9
50-69 HP.....	2	290-339 HP.....	10
70-89 HP.....	3	340-399 HP.....	11
90-119 HP.....	4	400 and over HP.....	12
120-149 HP.....	5	<u>Other types:</u>	
150-179 HP.....	6	Swather Conditioner Self Propelled.....	13
180-219 HP.....	7	Tracked Crawler Tractor 350 HP.....	14
220 and over HP.....	8	Other: _____.....	15

3.2 Mowing machinery (Please circle one number)

Mower, Sickle..... 061	1	Swather Conditioner (Up to 13ft).....	8
Mower, Rotary.....	2	Swather Conditioner (14ft & over).....	9
Mower, Flail.....	3	Flail chopper.....	10
Rotary Hay Mower.....	4	Forage Harvester Corn Head.....	11
Mower Conditioner.....	5	Forage Harvester Pickup Head.....	12
Rotary Mower Conditioner (Up to 10ft).....	6	Other: _____.....	13
Rotary Mower Conditioner (11ft & over).....	7		

4. Did mowing one acre with cover crops require more expenses or unpaid labor hours than mowing one acre without cover crops? (Please circle one number)

- Yes..... 062 1 → *Continue*
 No..... 2 → *Go to item 6.*

5. Additional labor hours/Acre: 063 _____ **Additional expenses:** 064 \$ _____/Acre

6. Please circle one number in each line:	Yes	No
I only mowed my acres with cover crops 065	1	2
All my acres were under cover crops..... 066	1	2

Section 4. Revenues and Costs

Please answer the following questions focusing only on your experience with the cover crop or cover crop mix chosen in Section 1 for the most recent year prior to 2016.

1. Was your cover crop grazed or harvested for forage? If yes, how much revenue or cost savings did you get from it? (Please circle one number)

- Yes..... 067 1 → Revenues or cost savings 068 \$ _____/Acre
 No..... 2

2. For this farm, did you participate in a cost-share program? If yes, what was the average payment per acre?

- Yes..... 069 1 → Average payment 070 \$ _____/Acre
 No..... 2

3. What cash crop did you plant most extensively following your cover crop? (Please circle one number)
 Corn for grain or seed 071 1 Soybeans.....2 Oats for grain 3
 Wheat for grain 4 Other: _____5

4. How many acres did you plant to this cash crop following your cover crop? 072 _____ Acres

5. What was your average yield in those acres? 073 _____ Bu/Acre

6. Did you also plant the cash crop reported in item 3 above on acres following NO cover crops? (Please circle one number)

Yes 074 1 → Continue

No 2 → Go to item 11

7. What was the average yield for this crop in your acres following NO cover crops? 075 _____ Bu/Acre

8. Compare your acres following cover crops versus your acres following NO cover crops: were your costs and practices different for any of the following categories? If yes, please circle the number and enter the values to the right.

	Were your costs or practices different?			Value following cover crops	Value following NO cover crops
	Yes	No			
Cash crop planting populations. Seeds/acre ...076	1	2	If yes, → 087	_____ 098	_____
Cash crop seed costs. \$/acre077	1	2	If yes, → 088	_____ 099	_____
Cash crop planting costs (excluding seed costs). \$/acre078	1	2	If yes, → 089	_____ 100	_____
Nitrogen fertilizer costs. \$/acre.....079	1	2	If yes, → 090	_____ 101	_____
Phosphorous and potassium costs. \$/acre080	1	2	If yes, → 091	_____ 102	_____
Manure costs. \$/acre081	1	2	If yes, → 092	_____ 103	_____
Insecticide costs. \$/acre082	1	2	If yes, → 093	_____ 104	_____
Fungicide costs. \$/acre083	1	2	If yes, → 094	_____ 105	_____
Herbicide costs. \$/acre084	1	2	If yes, → 095	_____ 106	_____
Soil testing costs. \$/acre.....085	1	2	If yes, → 096	_____ 107	_____
Costs to repair acres with soil erosion. \$/acre 086	1	2	If yes, → 097	_____ 108	_____

9. How many additional management hours did your cover crop require on top of your typical management hours for your cash crop following NO cover crops? If none, please enter "0". 109 _____ hours

10. Are tillage costs different for your acres following cover crops than for your acres following NO cover crops?

Yes 110 1

No 2

11. Did you rent cropland in the most recent year you planted cover crops prior to 2016? (Please circle one number)

Yes 111 1 → Continue

No 2 → Go to Section 5.

12. Did you plant cover crops on rented cropland? (Please circle one number)

Yes 112 1 → *Continue*

No 2 → *Go to Section 5.*

13. Did planting cover crops on rented land help you negotiate better terms? (Please circle one number)

Yes 113 1 → *Continue*

No 2 → *Go to Section 5.*

14. Please circle one number in each line.

I negotiated a lower rent. Yes.....114 1 No..... 2 *If yes, → I saved: 116 \$_____ /Acre*

I negotiated a longer lease. Yes.....115 1 No..... 2 *If yes, → Additional years: 117 _____*

Section 5. Tillage

If your answer to item 6 in Section 4 was yes, please continue. Otherwise, please go to Section 6.

1. What tillage practice did you use for the cash crop reported in item 3, Section 4? (Please circle one number in each line)

	Conventional (full-width) tillage	Vertical tillage only (i.e. Aerway, Turbo- till, Salford, etc.)	Reduced tillage only (strip till, mulch till, etc.)	Rotational no-till	Continuous no till
On acres following cover crops. 118	1	2	3	4	5
On acres following NO cover crops 119	1	2	3	4	5

If you chose 5 in both, please go to Section 6. Otherwise, please continue.

2. Did you hire custom work to till your acres? (Please circle one number in each cell. If you choose 2 “for some acres”, please enter the percent of acres custom tilled)

	In acres following cover crops		In acres following NO cover crops	
1st pass	Yes, for all acres ... 120 1	Yes, for some acres ... 2 → 123 _____%	Yes, for all acres ... 126 1	Yes, for some acres ... 2 → 129 _____%
	No.....3		No.....3	
2nd pass	Yes, for all acres ... 121 1	Yes, for some acres ... 2 → 124 _____%	Yes, for all acres ... 127 1	Yes, for some acres ... 2 → 130 _____%
	No.....3		No.....3	
3rd pass	Yes, for all acres ... 122 1	Yes, for some acres ... 2 → 125 _____%	Yes, for all acres ... 128 1	Yes, for some acres ... 2 → 131 _____%
	No.....3		No.....3	

3. How much did you pay for hiring custom work for tillage in each pass?

	<u>1st pass</u>	<u>2nd pass</u>	<u>3rd pass</u>
In acres following cover crops 132	\$ _____ /acre 134	\$ _____ /acre 136	\$ _____ /acre
In acres following NO cover crops 133	\$ _____ /acre 135	\$ _____ /acre 137	\$ _____ /acre

4. Tillage machinery

4.1 Codes for power machinery:

<u>2-wheel drive or mechanical front wheel drive tractor:</u>		<u>4-wheel drive tractor:</u>	
30-49 HP.....	1	200-289 HP.....	9
50-69 HP.....	2	290-339 HP.....	10
70-89 HP.....	3	340-399 HP	11
90-119 HP.....	4	400 and over HP.....	12
120-149 HP.....	5	<u>Other types:</u>	
150-179 HP.....	6	Swather Conditioner Self Propelled.....	13
180-219 HP.....	7	Tracked Crawler Tractor 350 HP	14
220 and over HP.....	8	Other: _____.....	15

4.2 What power machinery did you use to till non-custom hired acres? (Enter code from table above)

	<u>1st pass</u>	<u>2nd pass</u>	<u>3rd pass</u>
Following cover crops.....	138 _____	140 _____	142 _____
Following NO cover crops.....	139 _____	141 _____	143 _____

4.3 Codes for tillage machinery. Please indicate size for codes 6 -16.

Spring Tooth Harrow.....	1	Spike Tooth Harrow	2	Rotary Tiller.....	3
Row Crop Cultivator.....	4	Roller Packer	5		
Chisel Plow	6	→ Width.....	144 _____	Feet	
Disk Plow.....	7	→ Width.....	145 _____	Feet	
Mold-Board Plow Bottom	8	→ Number of Bottoms ..	146 _____	Bottoms	
Offset Disk.....	9	→ Width.....	147 _____	Feet	
Tandem Disk	10	→ Width.....	148 _____	Feet	
Vertical Tillage Tool.....	11	→ Width.....	149 _____	Feet	
Roller Harrow.....	12	→ Width.....	150 _____	Feet	
Field Cultivator.....	13	→ Width.....	151 _____	Feet	
Field Cultivator-Incorporator ..	14	→ Width.....	152 _____	Feet	
Disk, Field Cultivator	15	→ Width.....	153 _____	Feet	
Disk & V-Ripper	16	→ Width.....	154 _____	Feet	
Other: _____.....	17				

4.4 What tillage machinery did you use to till non-custom hired acres? (Enter code from table above.)

	<u>1st pass</u>	<u>2nd pass</u>	<u>3rd pass</u>
Following cover crops.....	156 _____	158 _____	160 _____
Following NO cover crops.....	157 _____	159 _____	161 _____

Section 6. Previous Rotation

Please answer the following questions focusing only on your experience with the cover crop or cover crop mix chosen in Section 1 for the most recent year prior to 2016.

1. What cash crop did you plant most extensively prior to this cover crop? (Please circle one)

Corn for grain or seed	162	1	Soybeans.....	2	Oats for grain	3
------------------------------	-----	---	---------------	---	----------------------	---

Wheat for grain 4 Other: _____5

2. Did you plant cover crops prior to the cash crop selected in item 1? (Please circle one)

Yes 163 1 → **Continue**

No 2 → **Go to Section 7.**

3. What cover crop or cover crop mix did you plant prior to the cash crop selected in item 1? (Please circle one)

- | | | | |
|---|---|--|----|
| Cereal rye.....164 | 1 | Oats + oilseed radish + buckwheat + | |
| Cereal rye + oats | 2 | crimson clover | 8 |
| Annual ryegrass | 3 | Oats +oilseed radish + turnip..... | 9 |
| Annual ryegrass + crimson clover | 4 | Crimson clover + oilseed radish..... | 10 |
| Annual ryegrass + crimson clover +
oilseed radish..... | 5 | Crimson clover + oilseed radish +
buckwheat | 11 |
| Annual ryegrass + crimson clover + | | Hairy vetch..... | 12 |
| Oilseed radish + rapeseed | 6 | Other: _____ | 13 |
| Oats + oilseed radish + buckwheat | 7 | | |

Section 7. Perceptions about Cover Crops

1. What are the top three challenges posed by using cover crops? (Please circle three)

- | | | |
|--|-----|----|
| Time/labor required for planting and increased management..... | 165 | 01 |
| Figuring out the right cover crop species for my operation | 166 | 02 |
| Cost of planting and managing cover crops is too high..... | 167 | 03 |
| Obtaining success in establishing cover crops..... | 168 | 04 |
| Too wet in the spring - fear of delayed planting of the following cash crop..... | 169 | 05 |
| Cover crops sometimes use too much soil moisture..... | 170 | 06 |
| No measurable economic returns when using cover crops | 171 | 07 |
| Cover crop might become a weed in the following year..... | 172 | 08 |
| Cover crop seed costs are too high | 173 | 09 |
| Yield reduction in the cash crop following cover crop | 174 | 10 |
| Cover crops increase overall crop production risk | 175 | 11 |
| Cover crop seed availability..... | 176 | 12 |
| Cover crops might cause nitrogen immobilization | 177 | 13 |
| Other: _____ | | 14 |

2. If you have the following cover crop educational opportunities available to you, please rate their effectiveness. (Please circle one number in each line)

	<u>Always effective</u>	<u>Sometimes effective</u>	<u>Seldom effective</u>	<u>Never effective</u>	<u>Not available</u>
Research information by myself on the internet 179	1	2	3	4	5
Large, regional meeting with experts giving presentations about the latest information and research on cover crops and how they fit into conservation systems..... 180	1	2	3	4	5
Meeting with my seed dealer, local retailer or agronomist on my farm to discuss cover crops 181	1	2	3	4	5
Local cover crops workshop where local experts and farmers who use cover crops present knowledge and share experiences 182	1	2	3	4	5
An on-farm visit by a local conservation advisor 183	1	2	3	4	5
Trying things out on my own and learning from successes and mistakes..... 184	1	2	3	4	5
Talking over the fence with my neighbor about their cover crops..... 185	1	2	3	4	5

3. What should be the roles for ag retailers in providing assistance and services supporting cover crops? (Please circle one number in each line)

	<u>Should not be a role</u>	<u>Should be somewhat of a role</u>	<u>Should be a significant role</u>
Helping assess and understand soil changes resulting from cover crop use 186	1	2	3
Helping to adjust nutrient management plans to account for cover crops..... 187	1	2	3
Providing cover crop termination advice and service 188	1	2	3
Providing cover crop seeding services . 189	1	2	3
Advising farmers on cover crop seed to purchase..... 190	1	2	3

4. Would you consider planting cover crops in the future? (Please circle one number)

Yes..... 191 1

No..... 2

Thank you for your help!