Cover Crop Farmer Experiences, Research, and Opportunities from SARE

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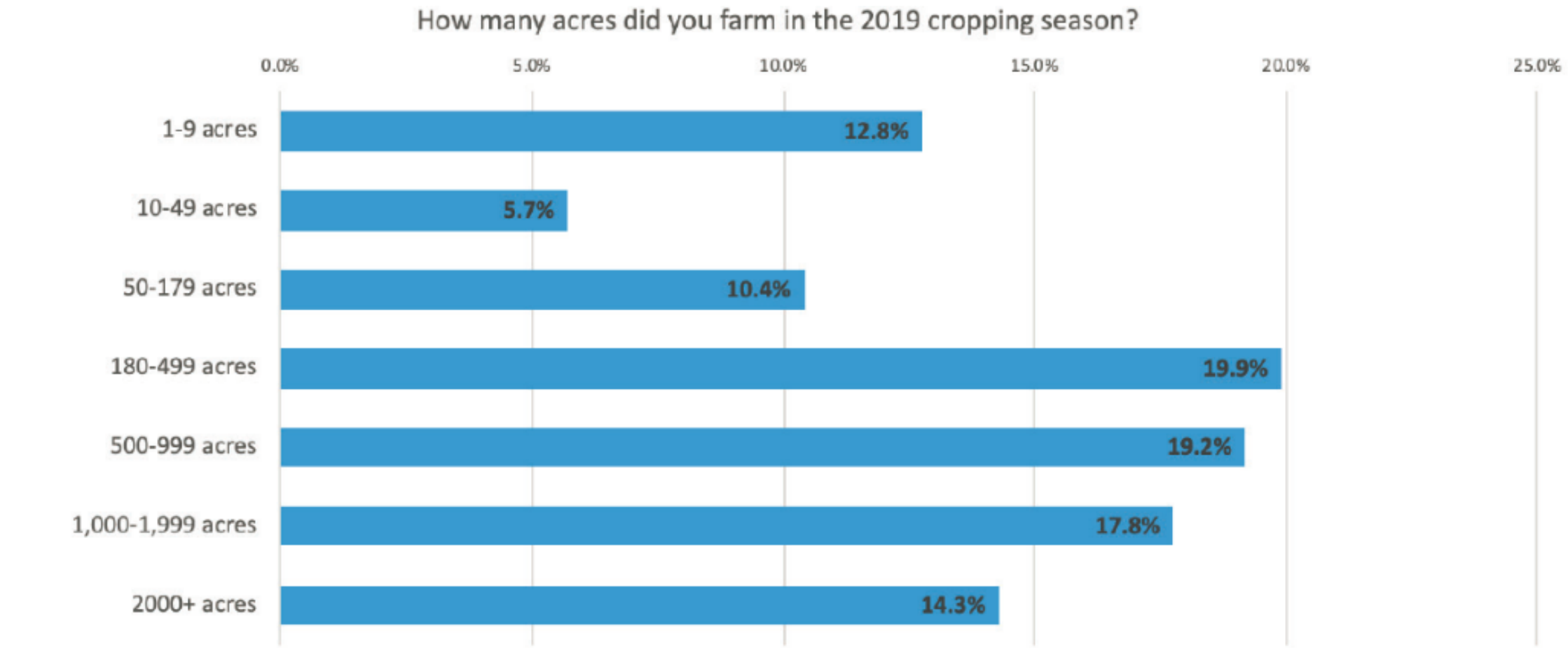
University of Missouri
and USDA-SARE

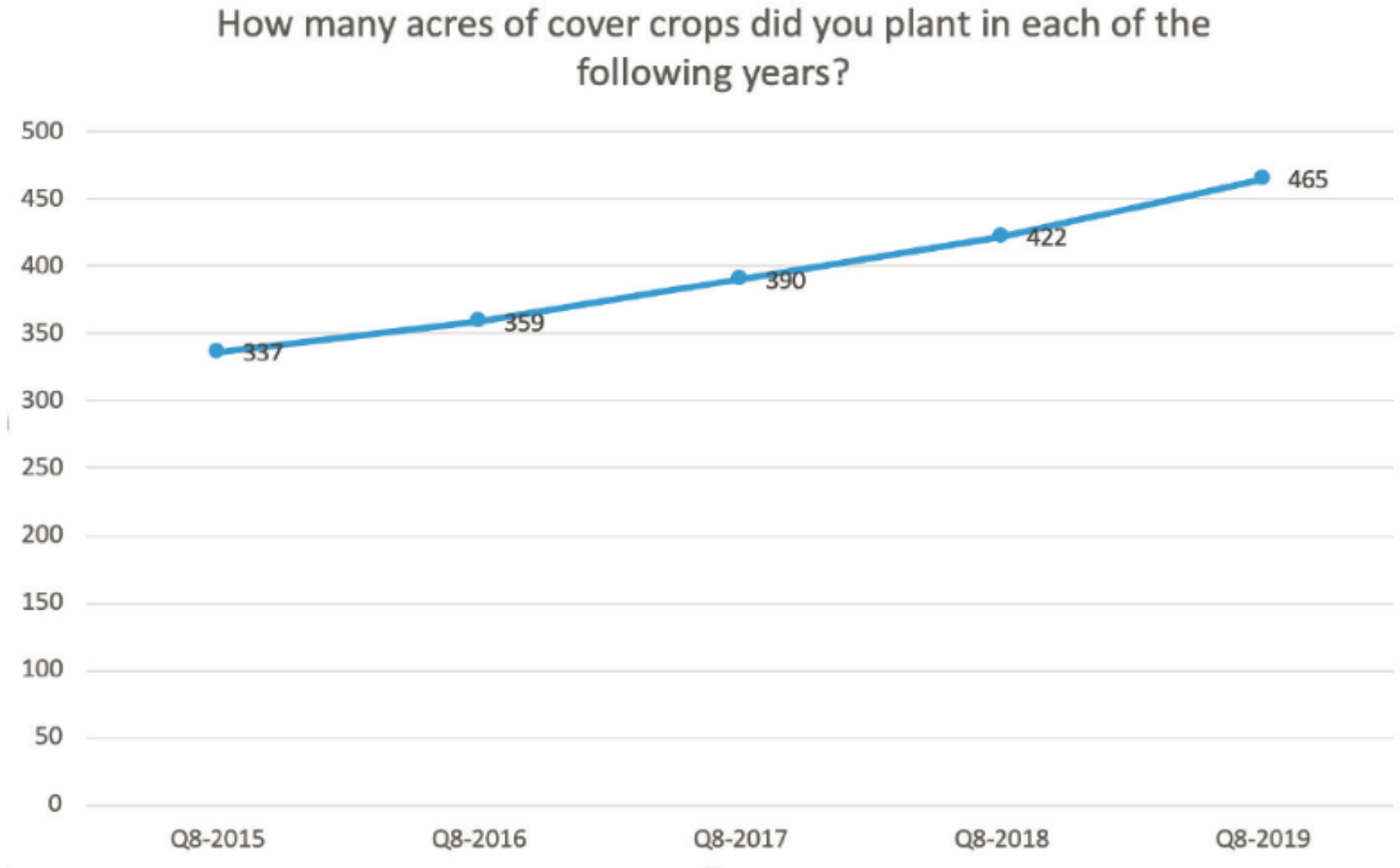
SARE/CTIC/ASTA National Cover Crop Survey

Photo by Edwin Remsburg
Of Jim Hershey, Pennsylvania

Respondent Demographics

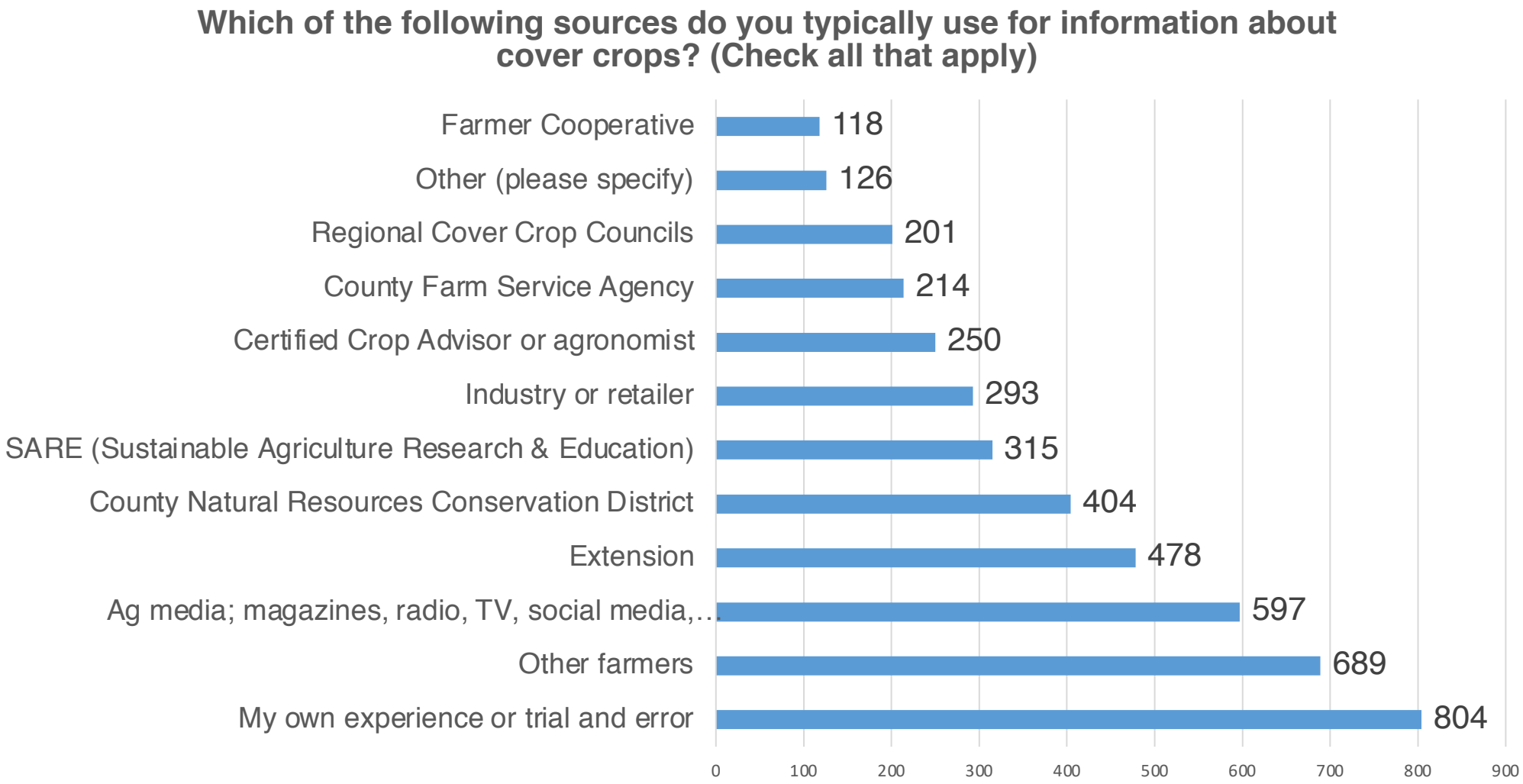


n=981

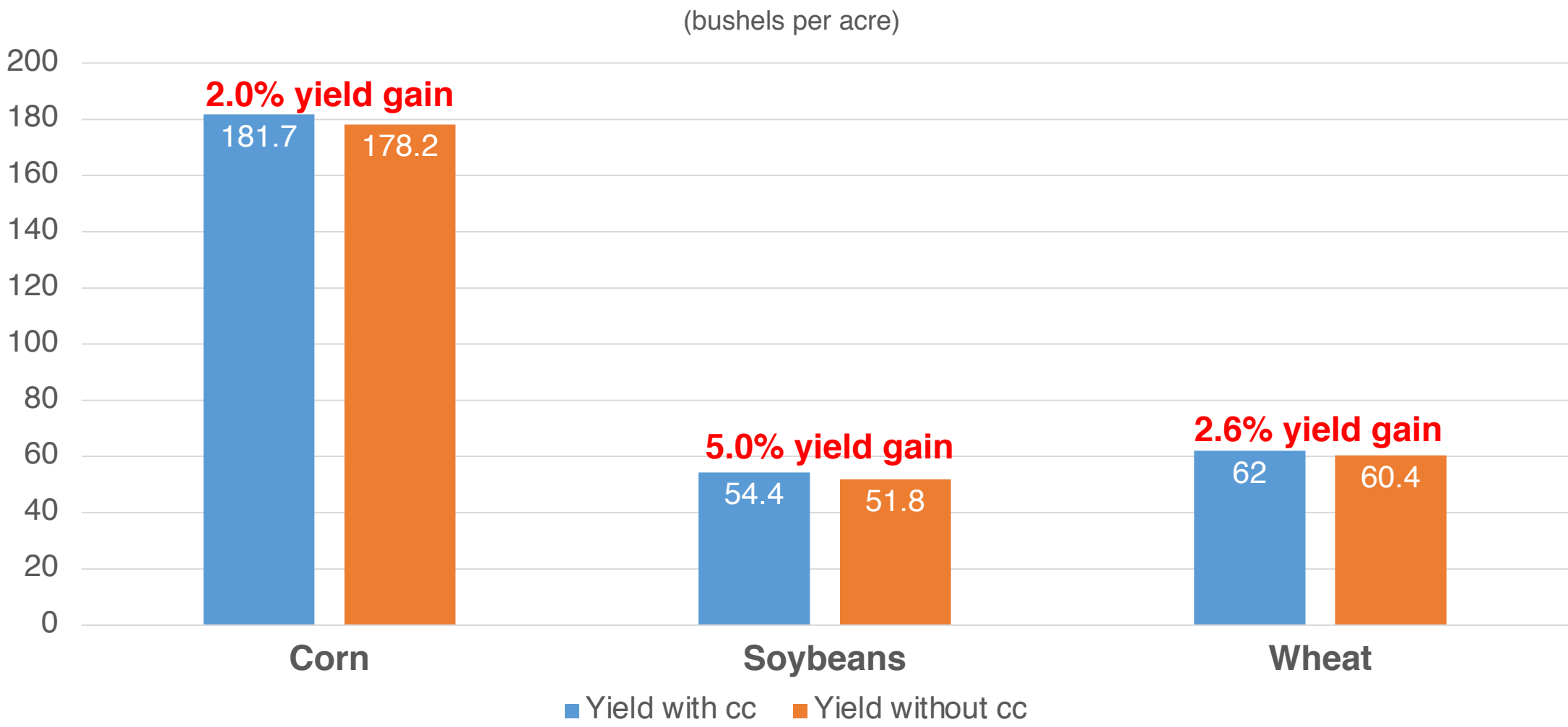


2015: n=837
2016: n=856
2017: n=914
2018: n=936
2019: n=950

Trusted Information Sources



Commodity yields with and without cover crops



Yield increases following cover crops

Crop Year	Corn	Soybeans
2012	9.6%	11.6%
2013	3.1%	4.3%
2014	2.1%	4.2%
2015	1.9%	2.8%
2016	1.3%	3.8%
2019	2.0%	5.0%

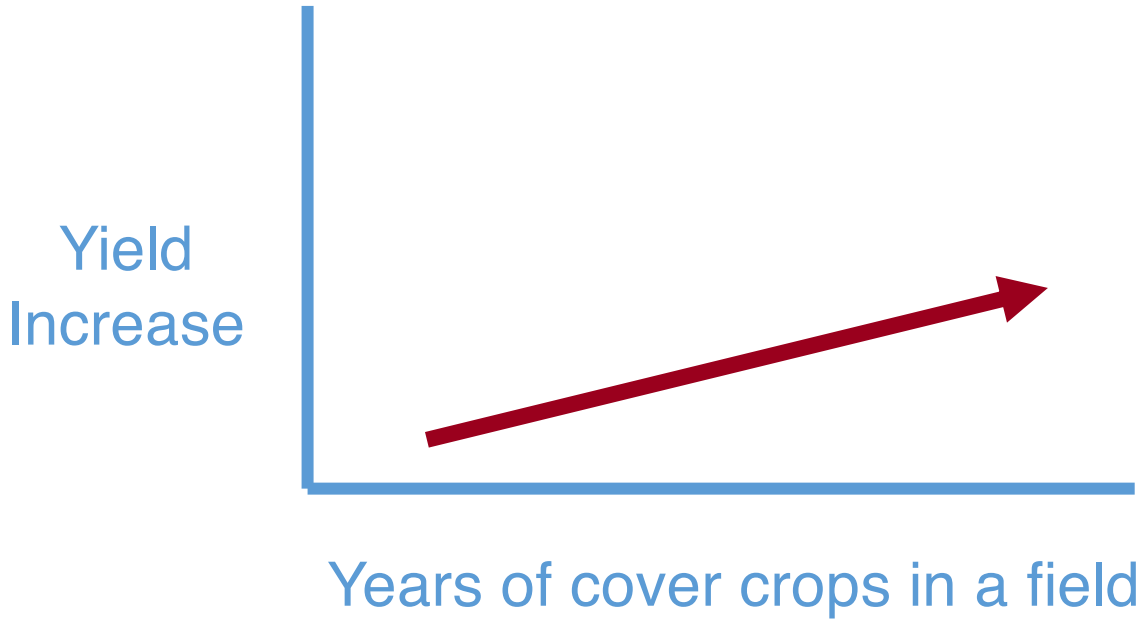
Data provided from farmers in the SARE/CTIC national cover crop survey.
Differences are statistically significant based on analysis by Purdue University.

asta | american seed trade association

SARE Sustainable Agriculture Research & Education

CTIC Conservation Technology Information Center

Yields Gradually Increase the Longer Cover Crops are Used



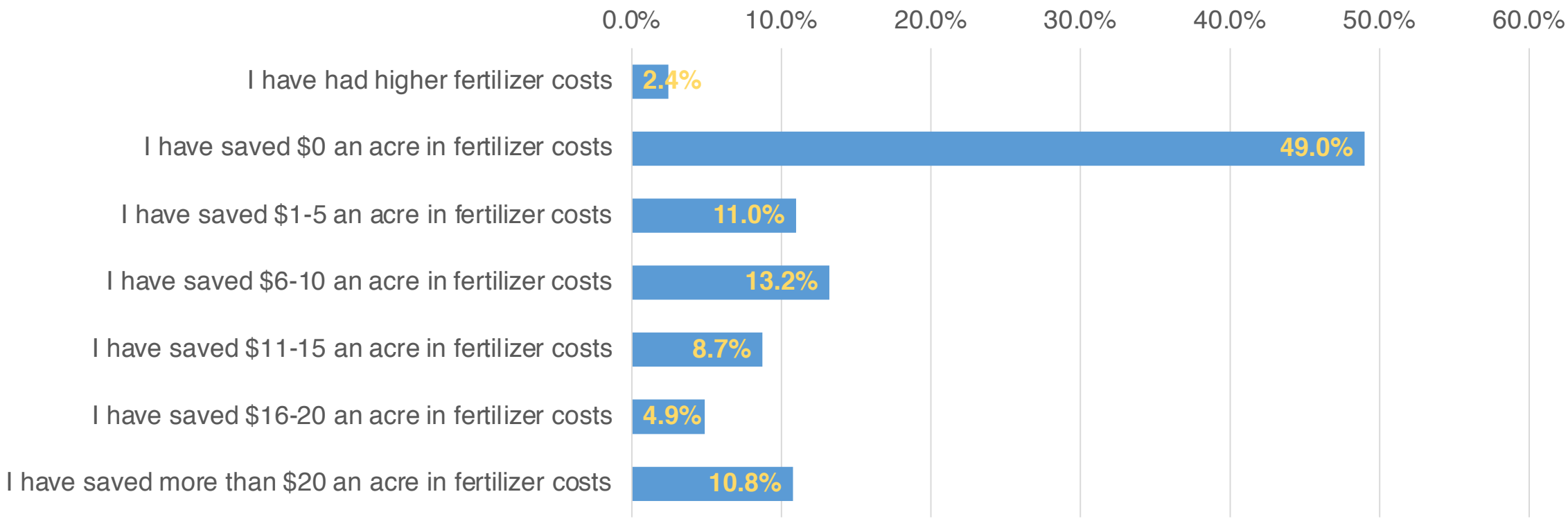
Cover Crop Yield Impact Over Time

TABLE 2. Percent increase in corn and soybean yields after one, three and five years of consecutive cover crop use on a field, based on a regression analysis of data for crop years 2015 and 2016[1]

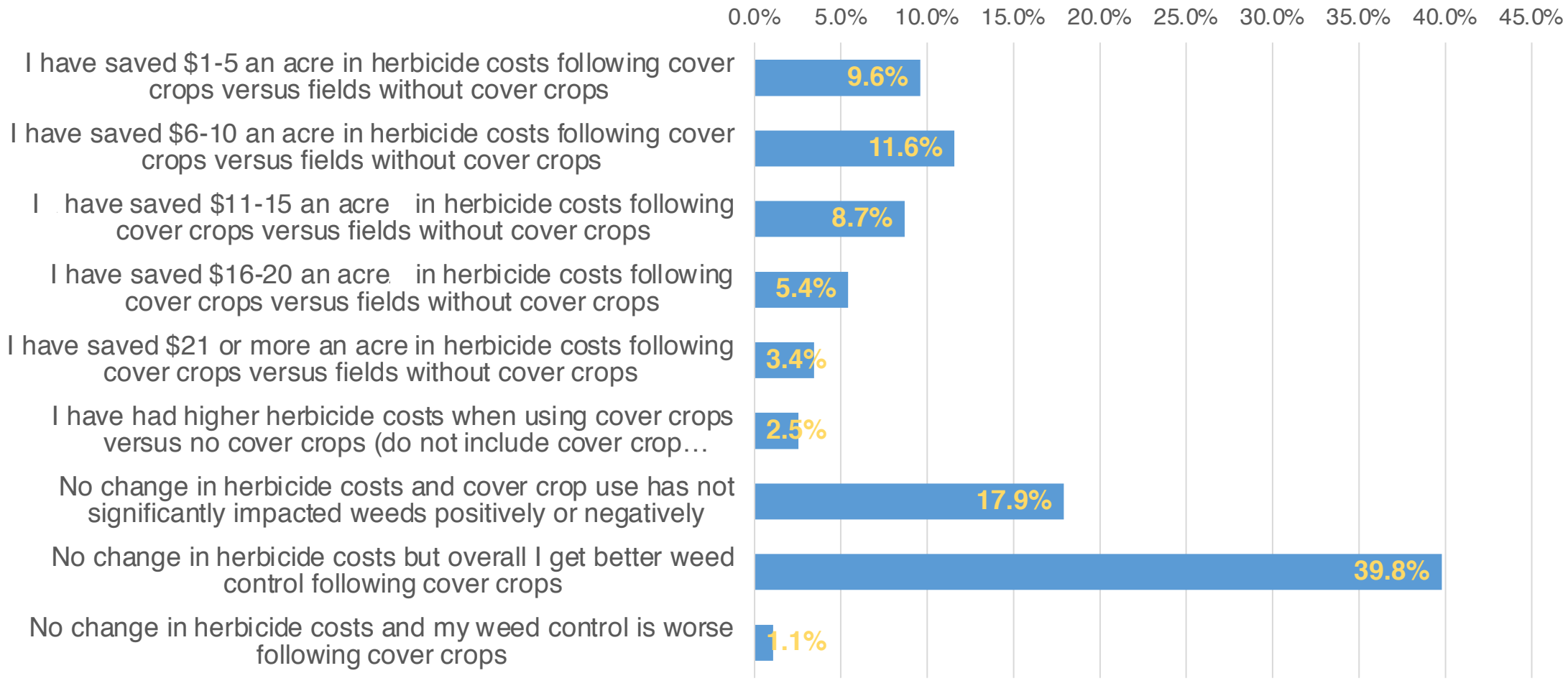
	ONE YEAR	THREE YEARS	FIVE YEARS
Corn	0.52%	1.76%	3%
Soybeans	2.12%	3.54%	4.96%

[1] Figures shown are an average of yields from the 2015 and 2016 growing seasons, with yield data obtained from about 500 farmers each year through the SARE/CTIC National Cover Crop Survey.

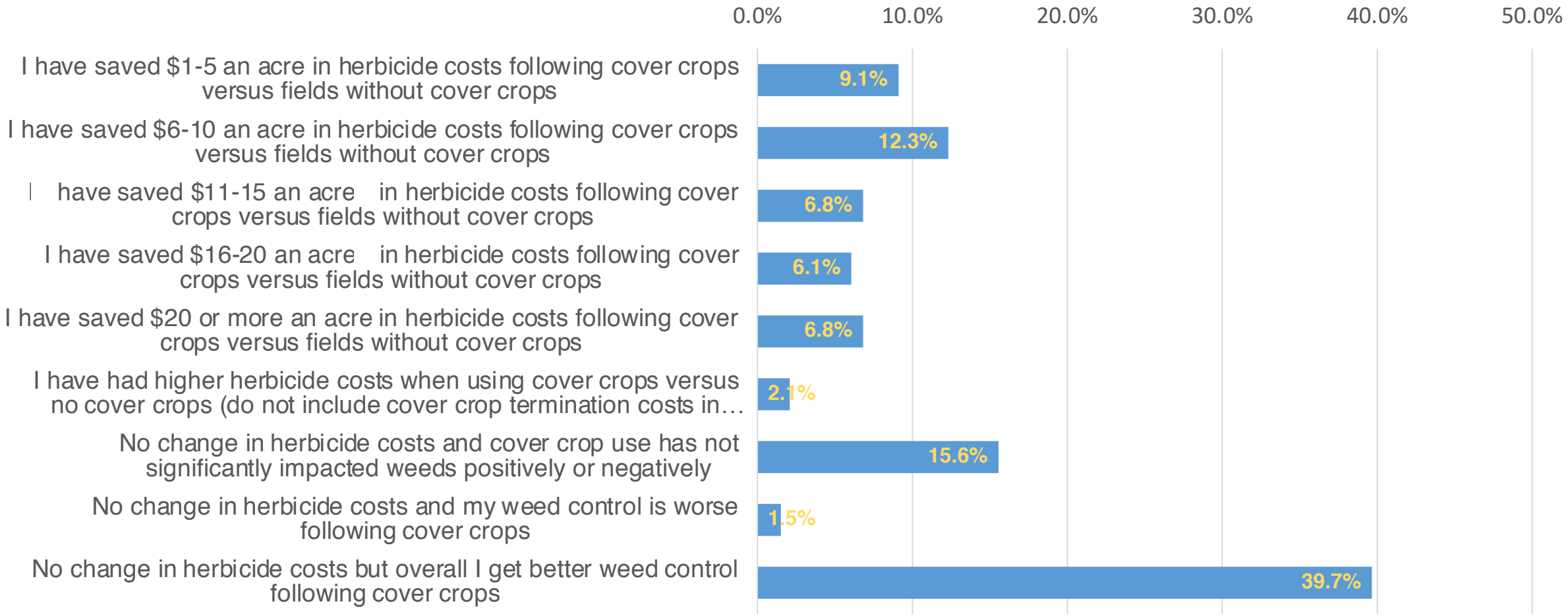
In corn fields where you have used cover crops for at least 3 consecutive years, how has cover crop use impacted your fertilizer costs for corn versus fields without cover crops?



How has using cover crops impacted your herbicide program in your corn fields, including cost for herbicides?

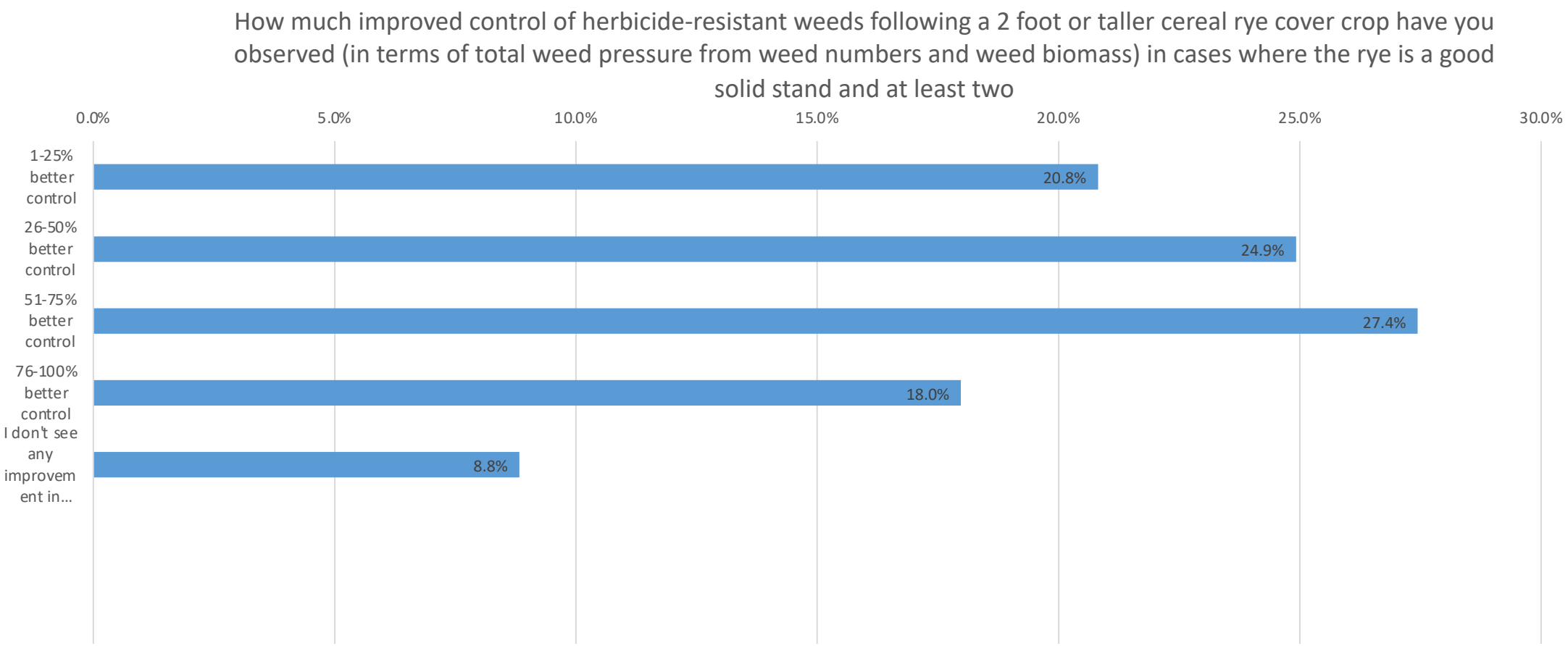


How has using cover crops impacted the herbicide program in your soybean fields, including cost for herbicides?

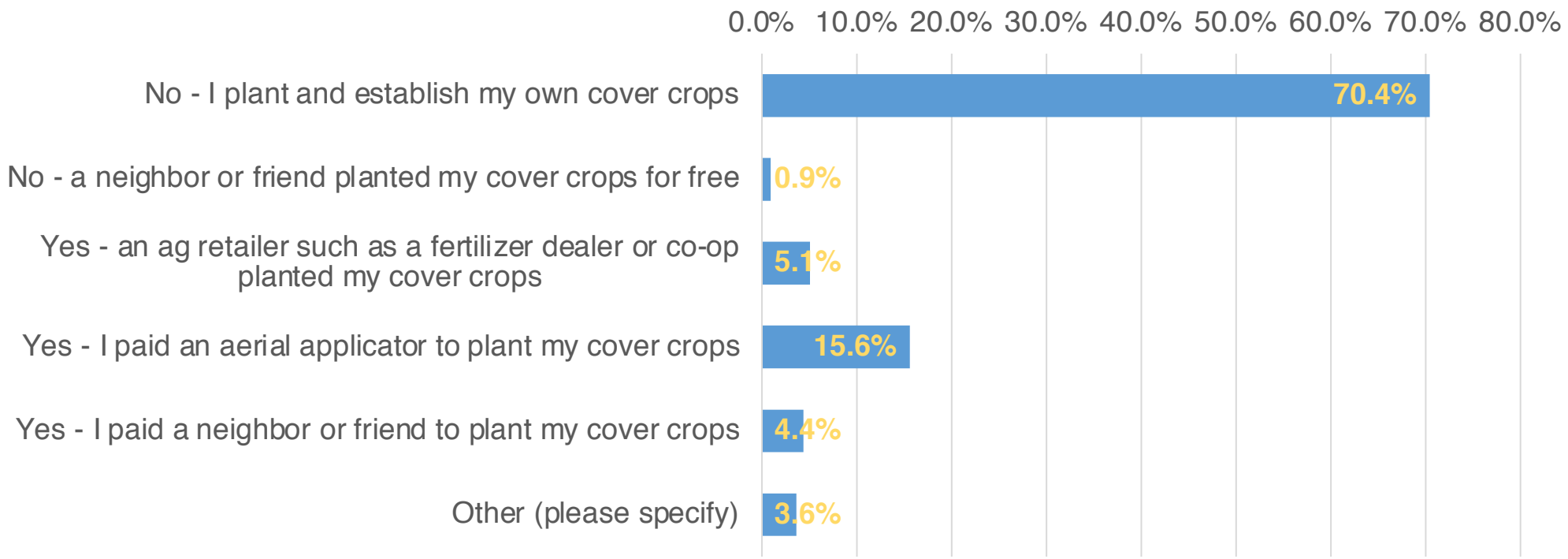


Cover crop impact on weed control

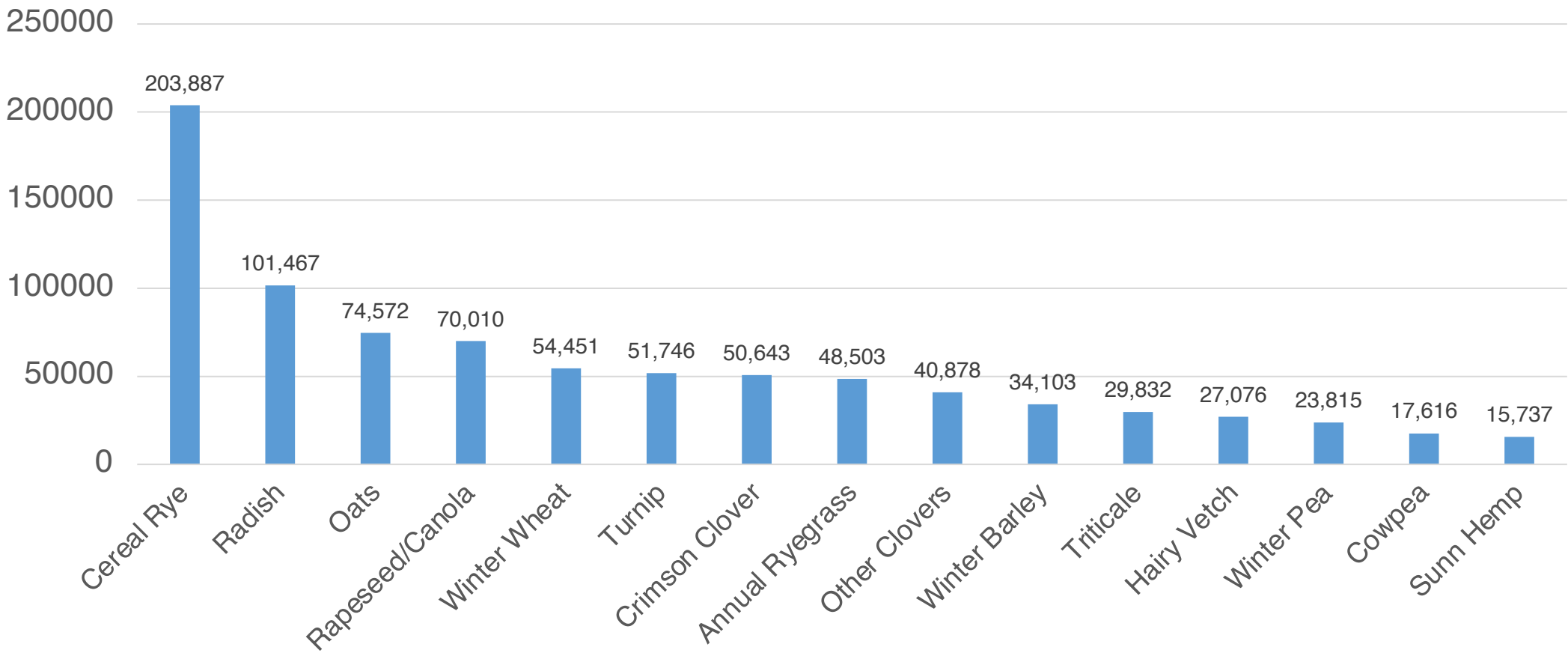
Figure 11


How much improved control of herbicide-resistant weeds following a 2 foot or taller cereal rye cover crop have you observed (in terms of total weed pressure from weed numbers and weed biomass) in cases where the rye is a good solid stand and at least two
0.0%
5.0%
10.0%
15.0%
20.0%
25.0%
30.0%
1-25% better control
20.8%
26-50% better control
24.9%
51-75% better control
27.4%
76-100% better control
18.0%
I don't see any improvement in...
8.8%

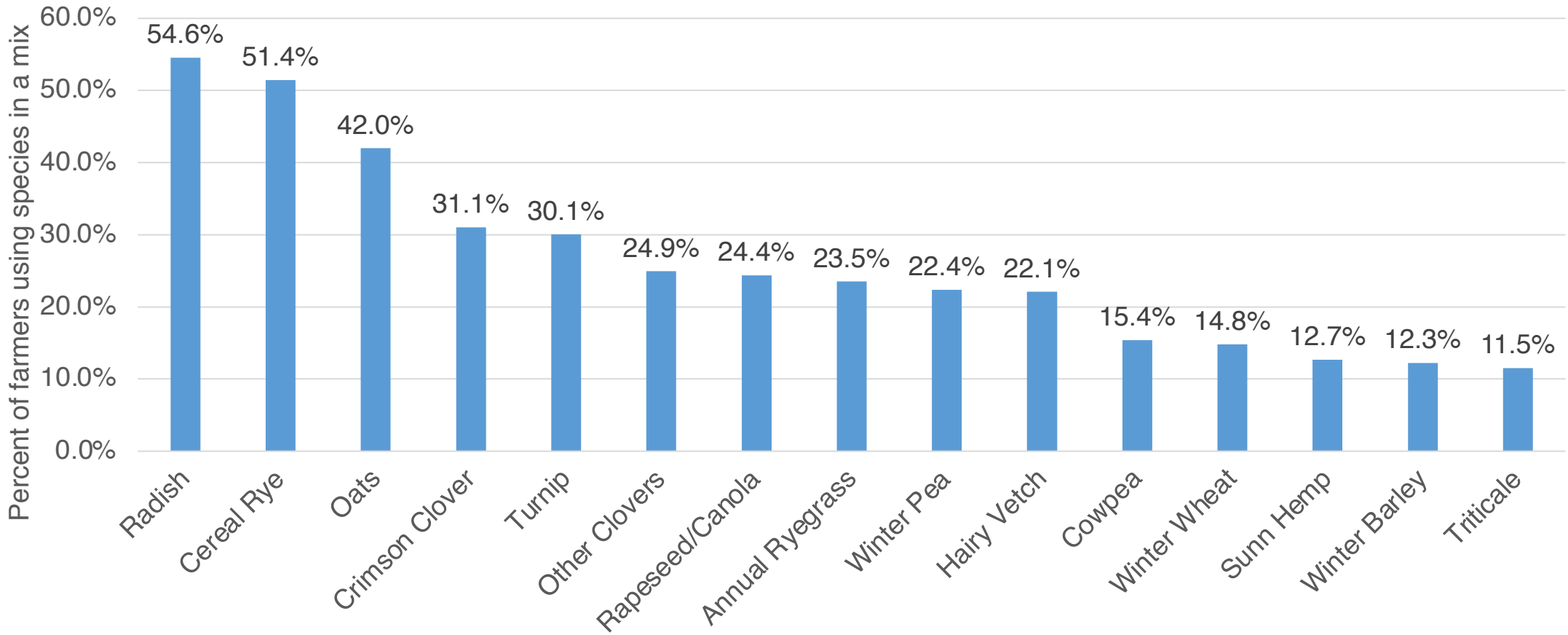
Did you pay someone to plant or establish cover crops on your farm?



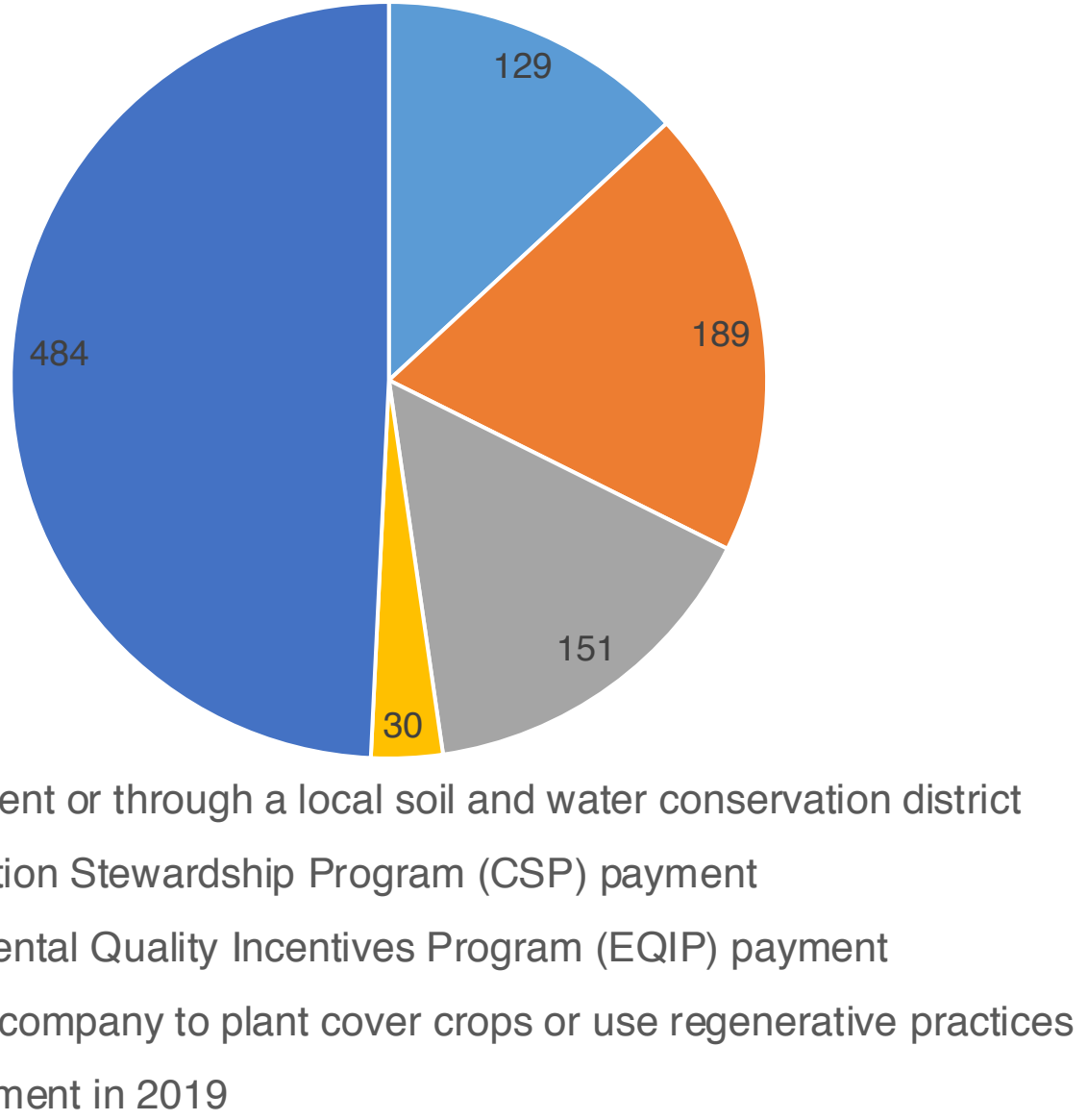
Total acres planted by cover crop species among surveyed farmers



Cover crop species planted in a mix



What, if any type of payment did you receive for planting cover crops in 2019?

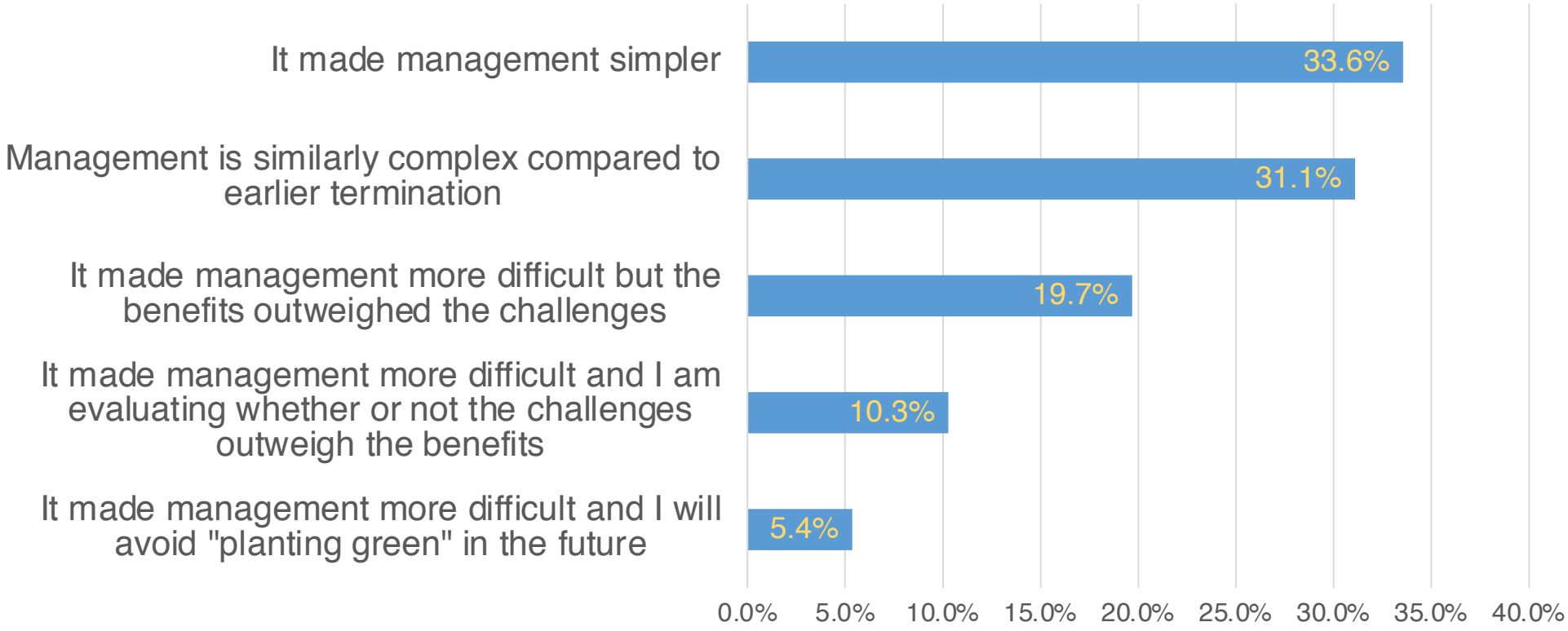


Planting green

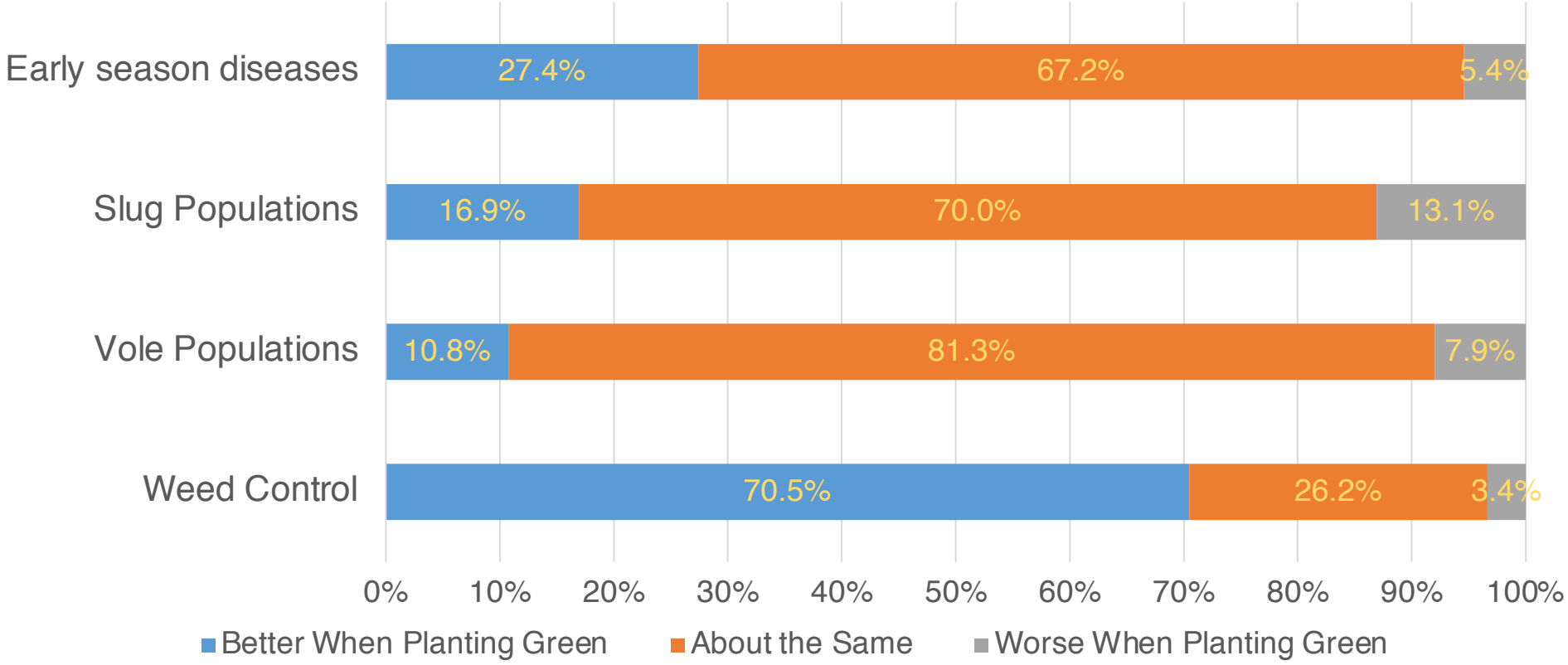
Planting green is the approach of planting a cash crop into a cover crop that is still green and alive, but normally terminated shortly after planting the cash crop

52.5% of survey respondents had planted green on some of their fields, 47.5% had not

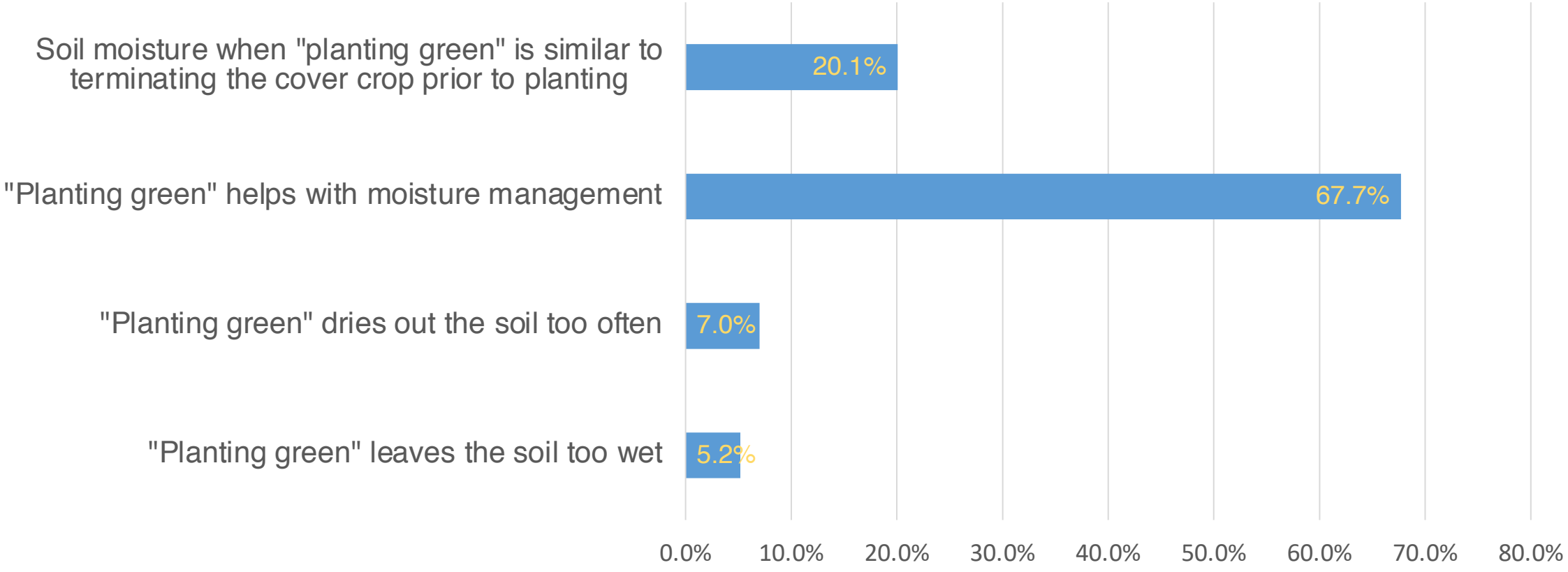
How did planting green affect your overall cover crop and cash crop management?



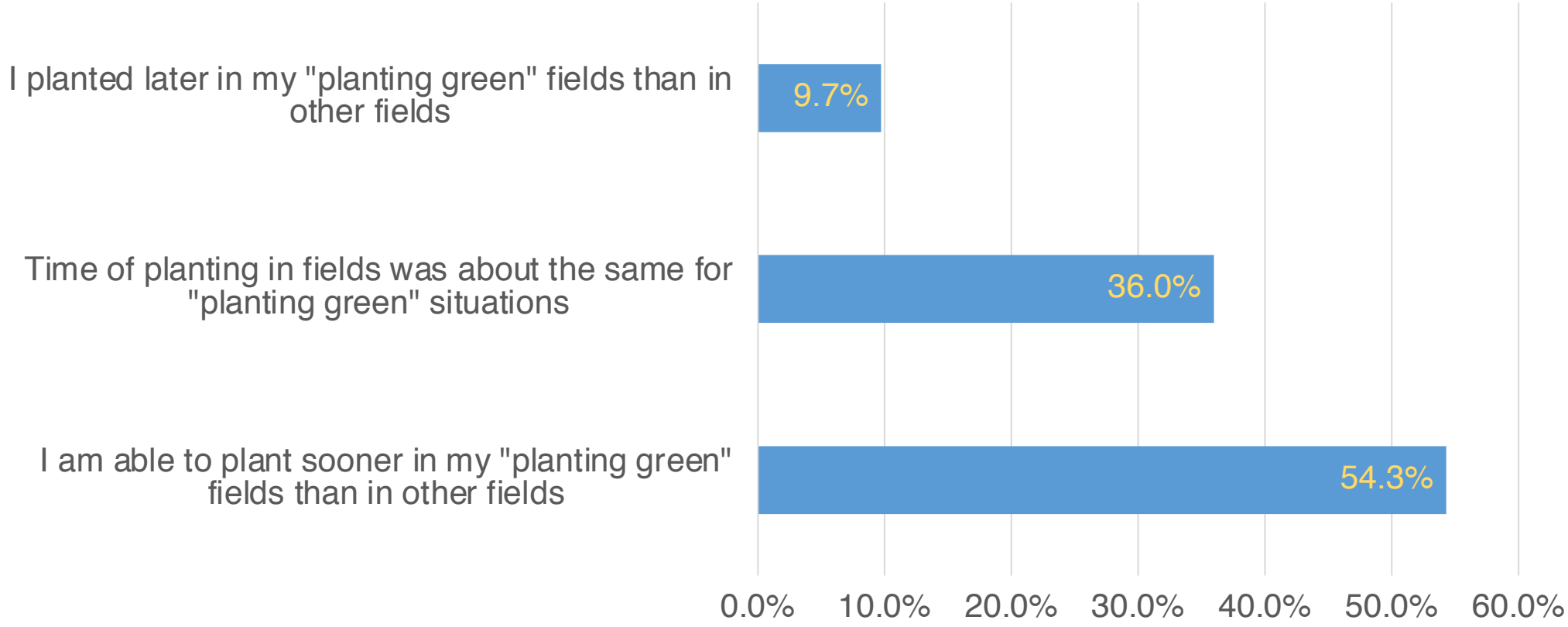
Planting green impact on pest issues



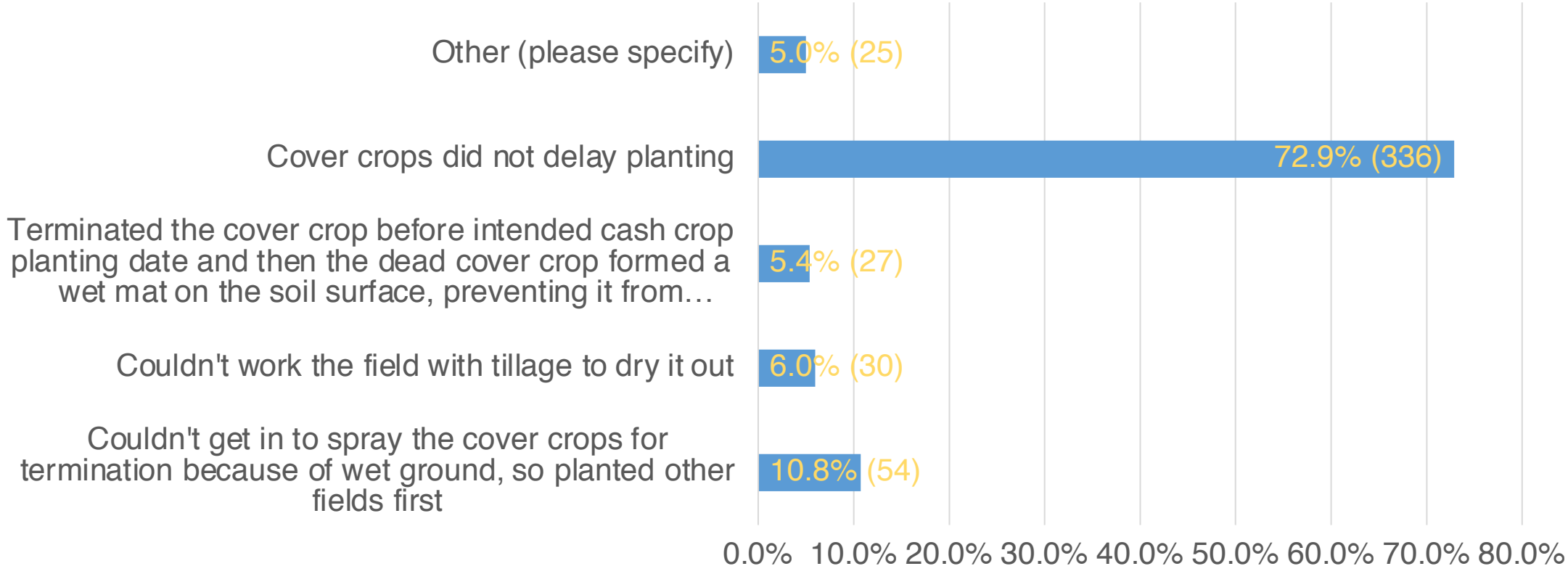
How has planting green impacted soil moisture at the time of planting your cash crop?



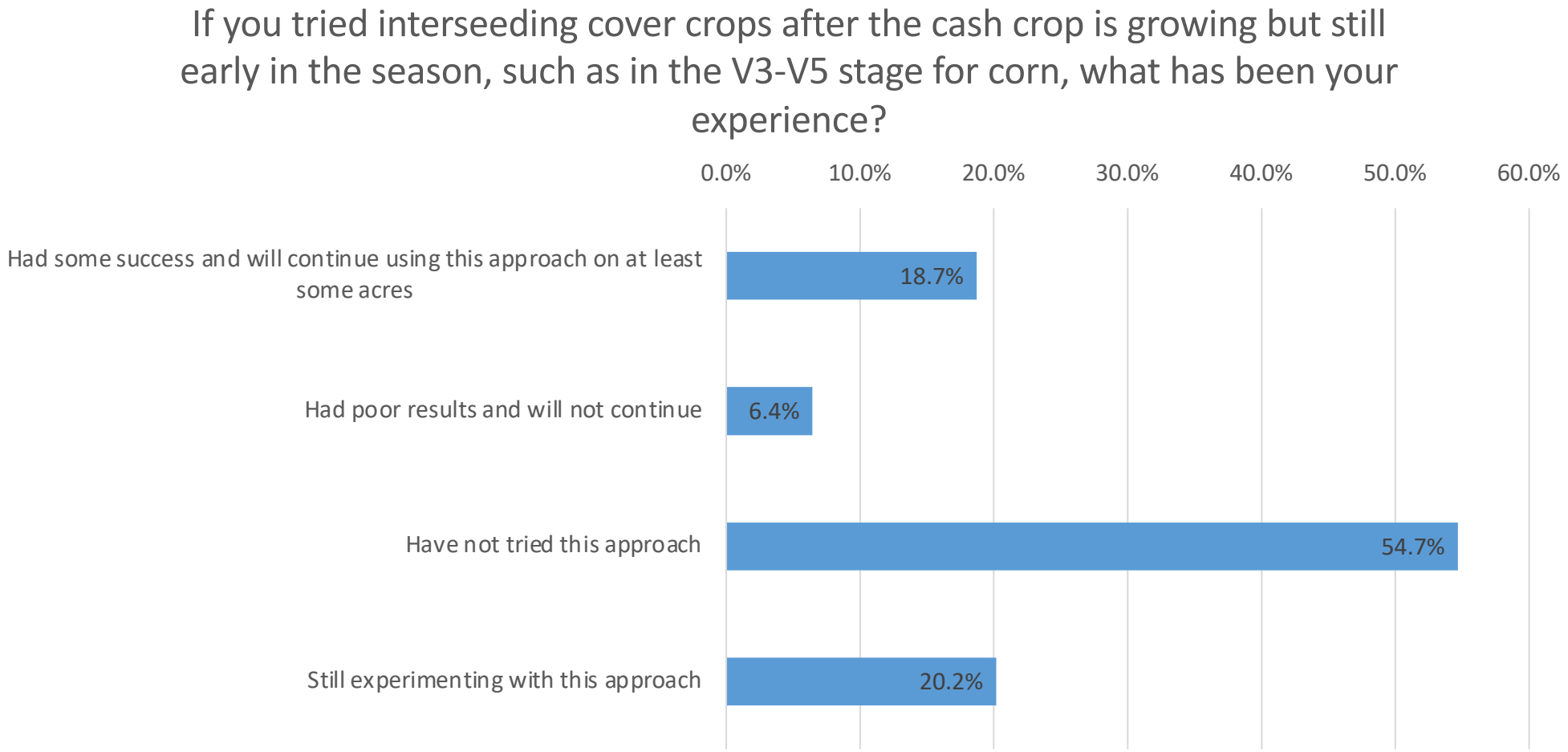
In terms of ease of planting your cash crop in "planting green" situations when soil is wet, what has been your experience compared to fields where the cover crop was either terminated earlier or not present?



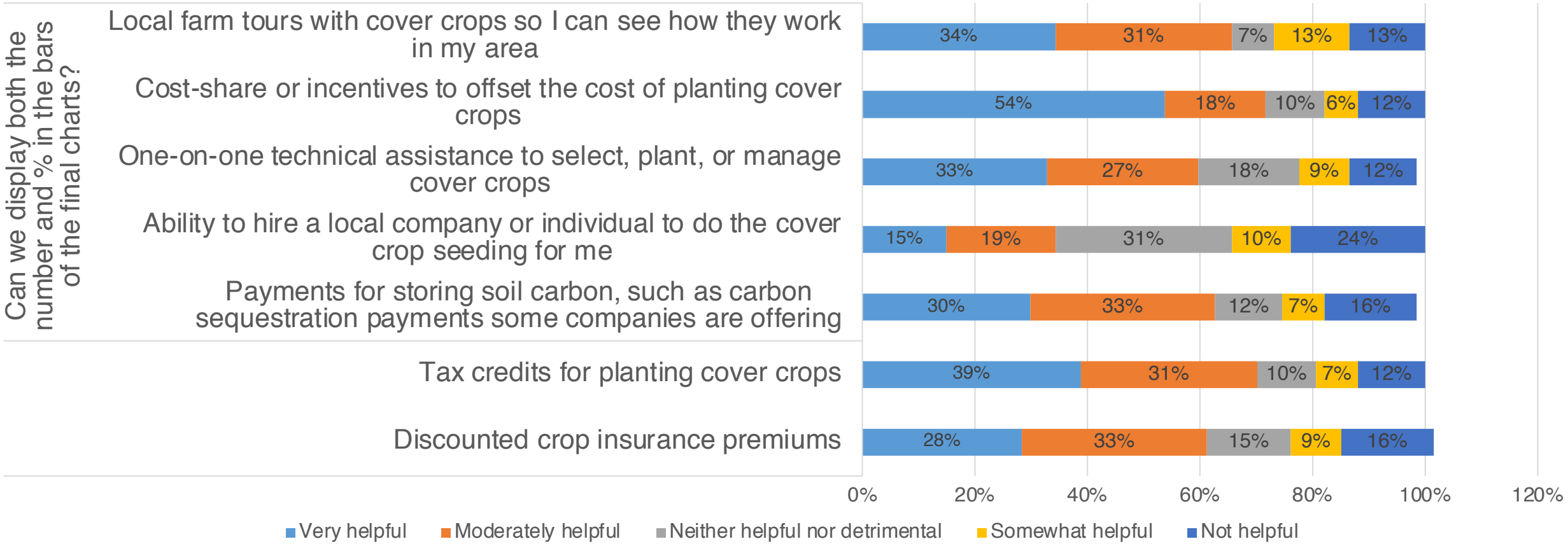
If cover crops generally delayed your ability to plant cash crops in 2019, what was the primary reason?



Interseeding Cover Crops



Approaches that would encourage farmers not yet using cover crops to try them

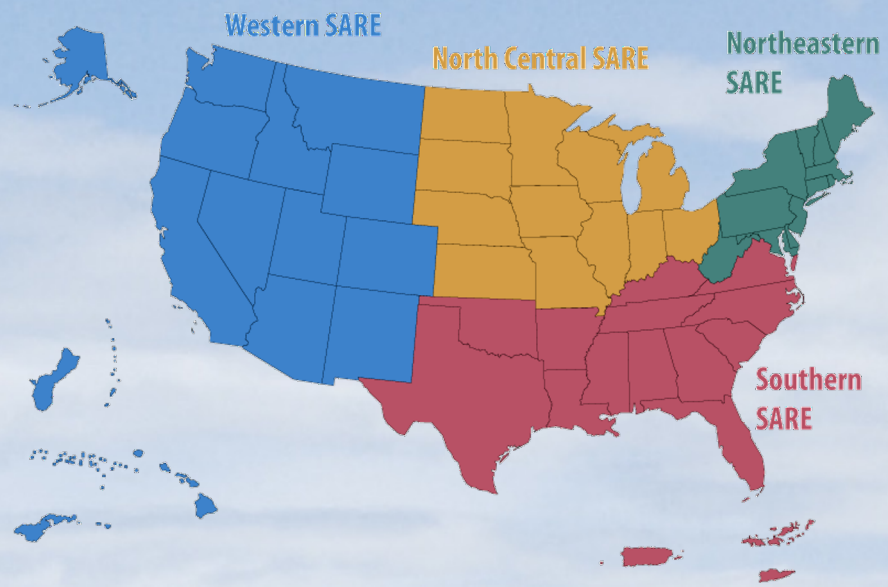



OVERALL, FARMERS ARE FINDING MANY
BENEFITS TO COVER CROPS, RANGING
FROM WEED CONTROL TO PLANTING DATE
TO YIELD AND PROFIT

What is SARE?

Grants and outreach to advance sustainable innovations to the whole of American agriculture.

Funded at $37 million per year through USDA



Visit **www.sare.org** or

www.northcentralsare.org

SARE Grant Types

- Since 1988, SARE has invested in about 1000 projects involving cover crops
- SARE in the North Central Region offers grants for:

Research & Education – up to $250,000 (due October 8)

Partnership – up to $40,000 (due October 22)

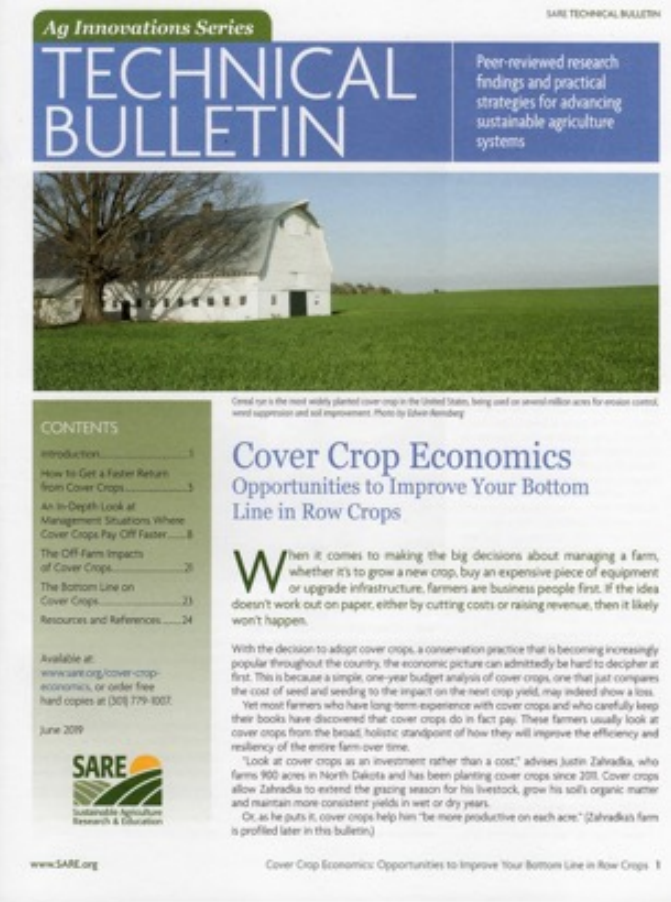
Farmer/Rancher - $9000 individual, more for teams (due Dec. 3)

Youth Educator – up to $4000 (due November 12)

Professional Development – up to $90,000 (due early April)

Graduate Student – up to $15,000 (due second week of April)

SARE Cover Crop Economics Bulletin


Ag Innovations Series

TECHNICAL BULLETIN

Peer-reviewed research findings and practical strategies for advancing sustainable agriculture systems

CONTENTS

Cover Crop Economics

Opportunities to Improve Your Bottom Line in Row Crops

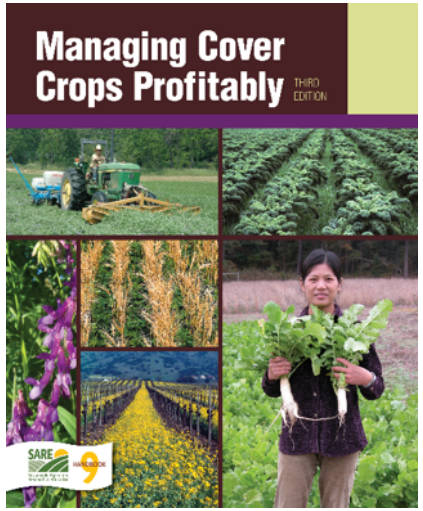
SARE

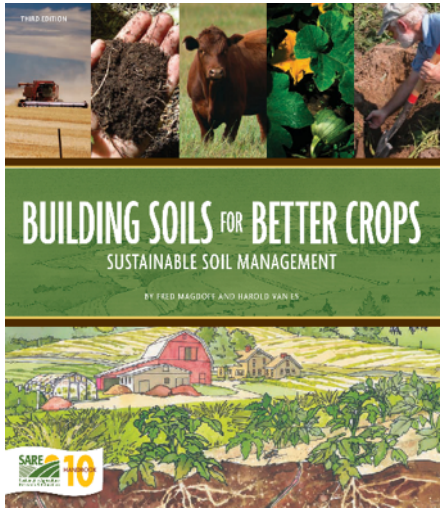
SARE Cover Crop Economics Report

- Released summer 2019
- Based on data from 5 years of SARE/CTIC National Cover Crop Survey plus other data
- 24 pages, including farmer examples
- Authors – Rob Myers, Alan Weber, and Sami Tellatin
- Publication is available to read online or print copies (single or bulk) can be ordered for free

Other SARE Informational Resources

- SARE Books:
  - *Managing Cover Crops Profitably*
  - *Building Soil for Better Crops*
  - E-reader versions available on SARE's website
- SARE Bulletins:
  - "Cover cropping for pollinators and beneficial insects"
  - "Cover crops for sustainable crop rotations"

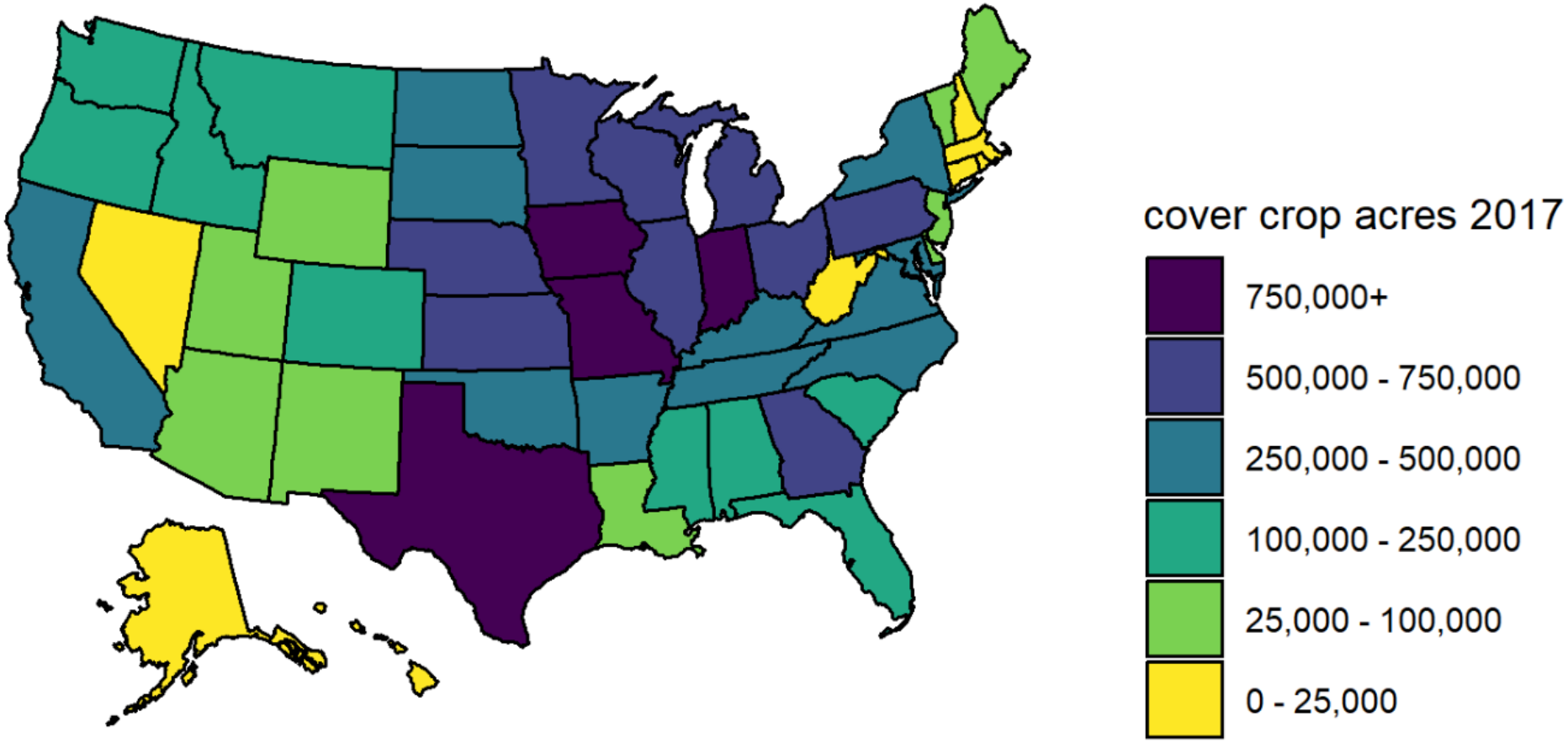




SARE
Sustainable Agriculture Research & Education

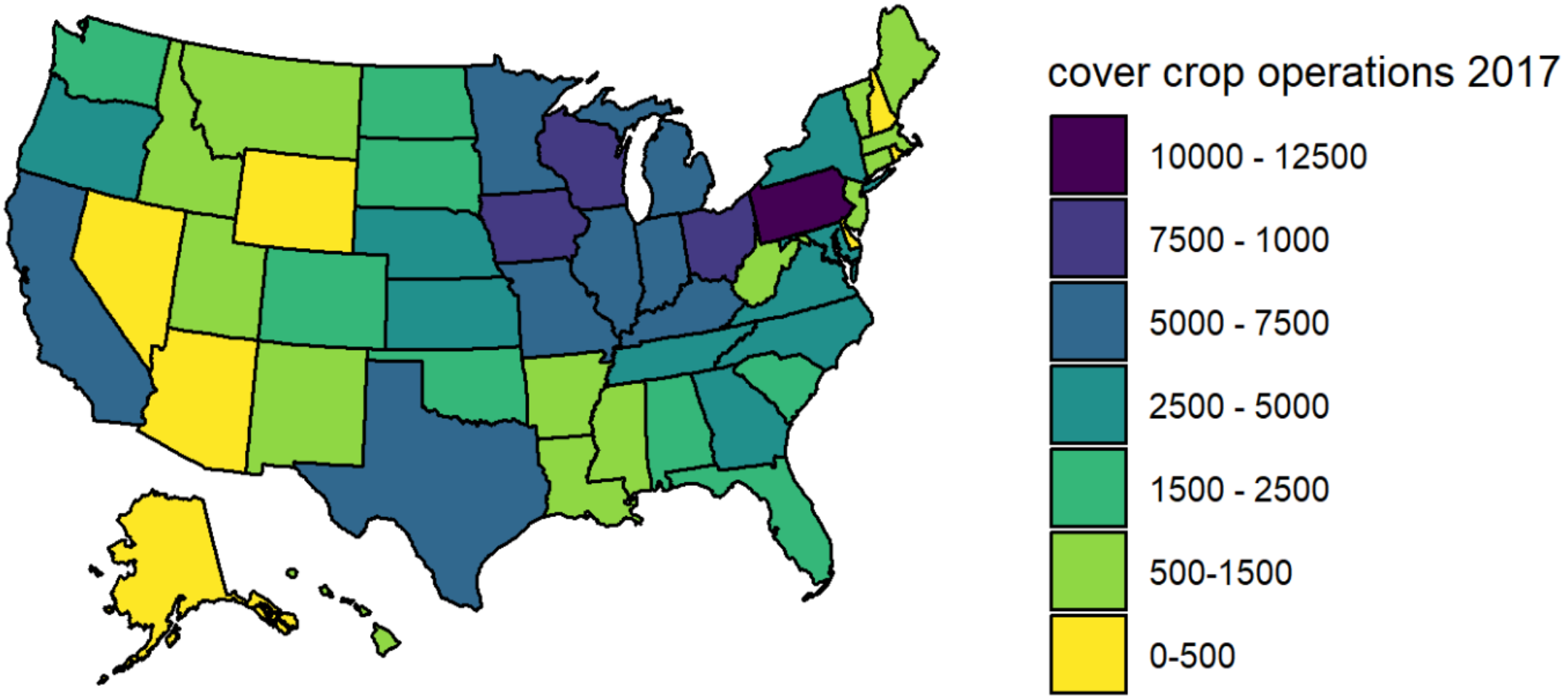

Cover Crop Adoption

Cover Crop Acreage Planted by State in 2017



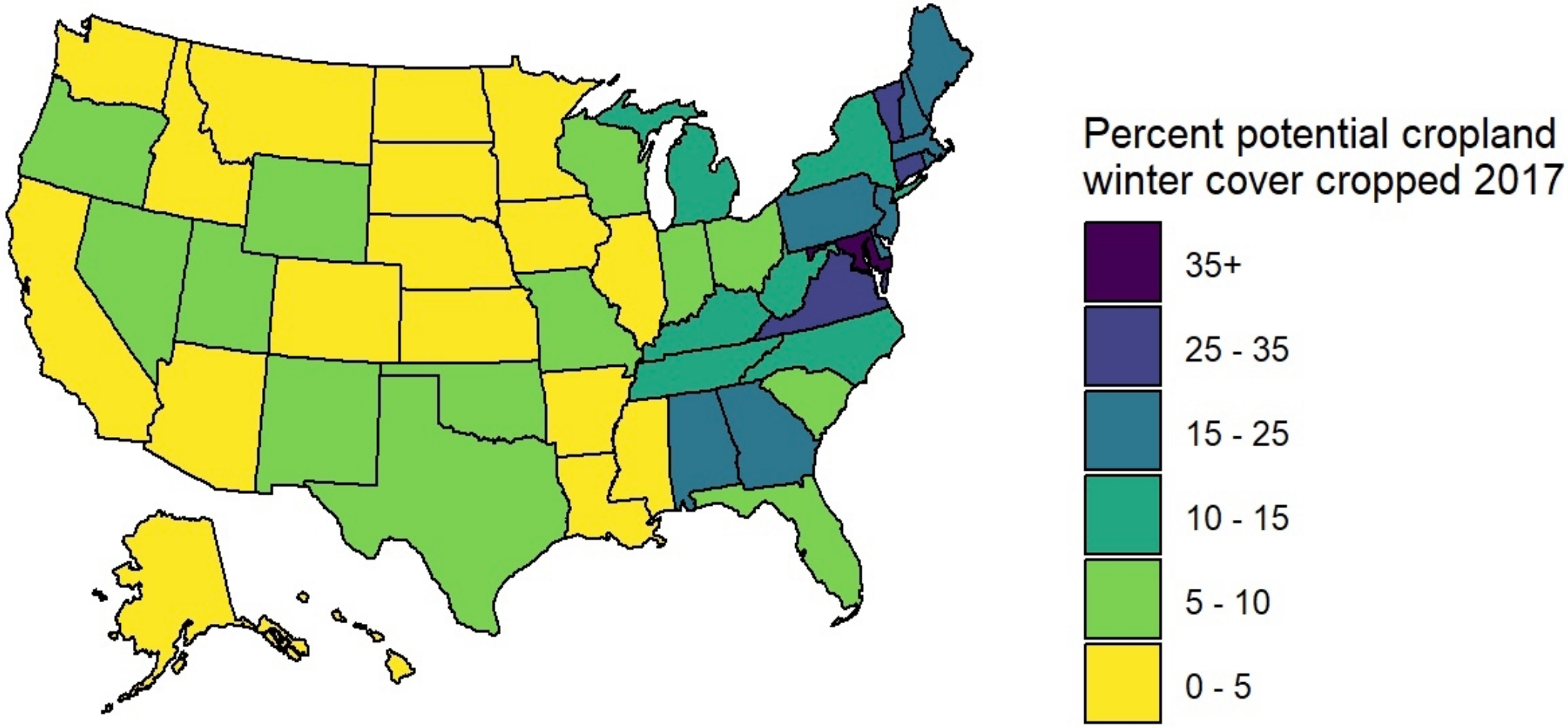
Data source: 2017 Census of Agriculture

Number of Farm Operations Planting Cover Crops in 2017



Data source: 2017 Census of Agriculture

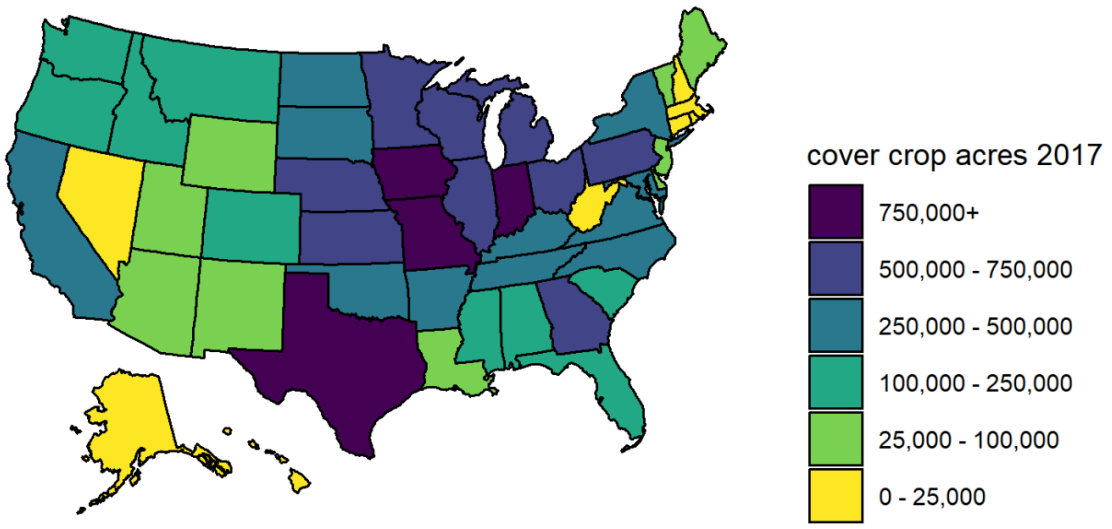
Percent of Available Cropland* Planted to Cover Crops in 2017

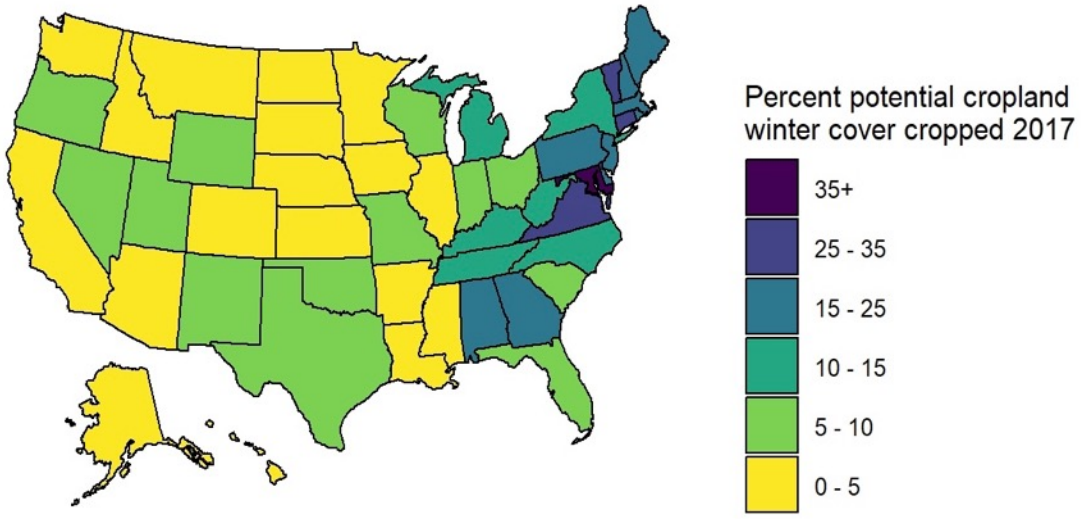


Data source: 2017 Census of Agriculture

*Available cropland = harvested cropland – (hay and haylage acres + pastured crop acres + CRP/WRP acres + harvested winter wheat acres)

Two Ways of Looking at Cover Crop Acres





Data source: 2017 Census of Agriculture

Cover Crop Numbers from 2017 Census of Ag

- Total cover crop acres in the U.S. increased from 10.3 million acres in 2012 to **15.4 million acres** in 2017, a 50% increase
- Total number of farm operations with cover crops increased by 15.2% to **153,402 farm operations**
- Eight states more than doubled their cover crop acreage in that five-year stretch – IA, AZ, IL, MO, MS, NE, VT and OH
- Ten states had at least 20% cover crops and Maryland had 41% of available cropland planted to cover crops

Projected Growth in U.S. Cover Crop Acres

Cover crop acreage grew by an average 8.4% compounded annually from 2012 to 2017. Assuming that same growth rate for the next decade, U.S. cover crop acreage would look like the following:

2017	15.4
2018	16.7
2019	18.1
2020	19.6
2021	21.2
2022	23.0
2023	25.0
2024	27.1
2025	29.3
2026	31.8
2027	34.5
2028	37.4
2029	40.5

Next Census in 2022 would have 23 million acres,
by a decade from now there would be 40 million acres

Cover Crop Acreage Midwest States

COVER CROP ACREAGE FROM THE 2017 CENSUS OF AGRICULTURE			
State	2017 acreage	2012 acreage	Percent increase
Iowa	973,112	379,614	156.3%
Indiana	936,118	596,062	57.1%
Missouri	842,178	390,114	115.9%
Nebraska	747,903	357,264	109.3%
Ohio	717,759	357,292	100.9%
Illinois	708,105	318,636	122.2%
Michigan	673,205	437,200	54.0%
Wisconsin	611,231	553,005	10.5%
Minnesota	579,147	408,190	41.9%
Kansas	556,439	322,454	72.6%
North Dakota	404,267	213,810	89.1%
South Dakota	281,649	149,383	88.5%
TOTALS ->	8,031,113	4,483,024	79.1%

Size of the Cover Crop Industry in the U.S.

Cover crop acreage estimated at about 20 million acres for 2020.

By 2029, current growth rate projects to 40 million acres.

40 million acres x $25 seed/acre = BILLION DOLLAR INDUSTRY

To sell seed for 40 million acres will require over one million acres of cover crop seed production.

Over 150,000 farm operations are using cover crops today, with thousands more each year.

What is driving this growth? Soil health measurement, demand for sustainably produced foods, and desire for better yields and profit.

What is Possible With Cover Crop Adoption?

Lancaster County, PA
Photo credit: Steve Groff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BENEFITS TO COVER CROPS, RANGING
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TO YIELD AND PROFIT