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Iowa 4R Plus Market Research Report

March 8, 2017

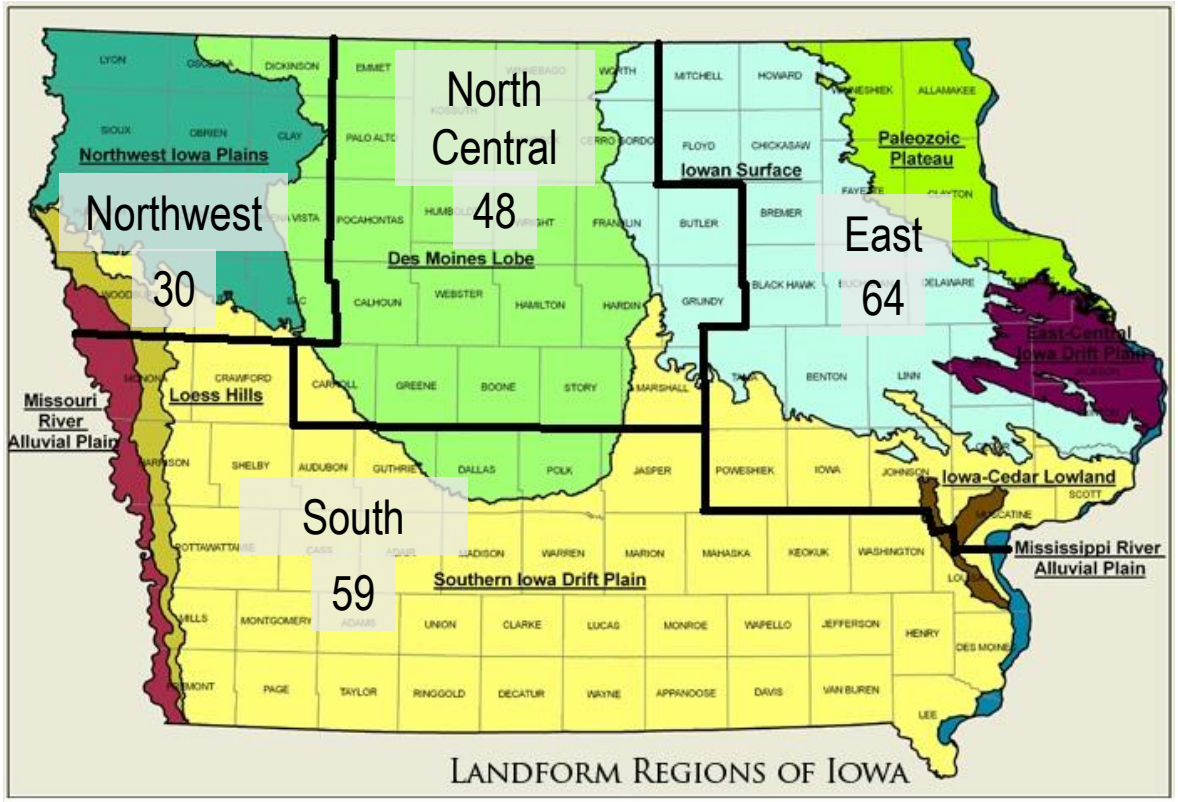
Confidential DO NOT Distribute

Research Objectives

- **The objectives of research were to**:
  1. Assess farmers' and crop advisers' recognition and understanding of 4R nutrient management and conservation practices, and where and how they get their information about the 4R program.
  2. Assess farmers' and crop advisers' recognition and understanding of 4R terminology and practices.
  3. Determine the gaps in information on 4R PLUS programs and practices.
  4. Identify barriers and motivators to the implementation of 4R PLUS practices.
  5. Evaluate 4R PLUS proposed messaging effectiveness.

The regional breakdown for this study of Iowa closely matches the landform regions.

Iowa region	n=
North Central	48
East	64
South	59
Northwest	30
Total	**201**



n=201

Over three-quarters of respondents were 45 to 65 years old, which reflects the age of farming decision-makers.

Age	n=
21-25	1
26-35	10
36-45	18
46-55	55
56-65	113
Prefer not to answer	4
Total	**201**

n=201

Acreage size of farmer respondents.

Acres	n=
500 – 999	122
1,000 – 1,999	69
2,000 and above	10
Total	**201**

Average = 996.8

Corn acres	n=
Less than 250	4
250 – 499	106
500 – 749	56
750 – 999	23
1,000 and above	12
Total	**201**

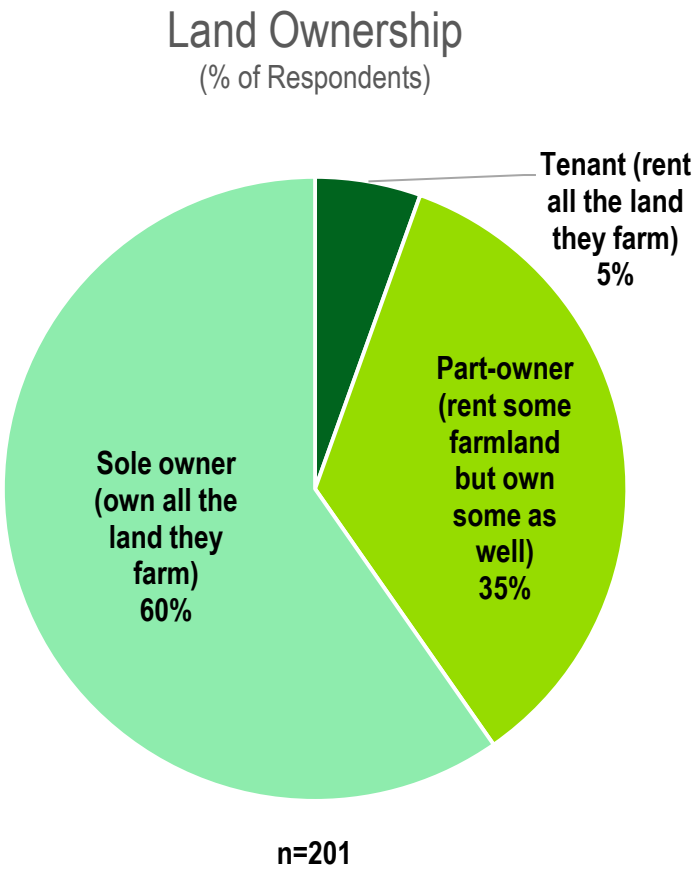
Average = 530.7

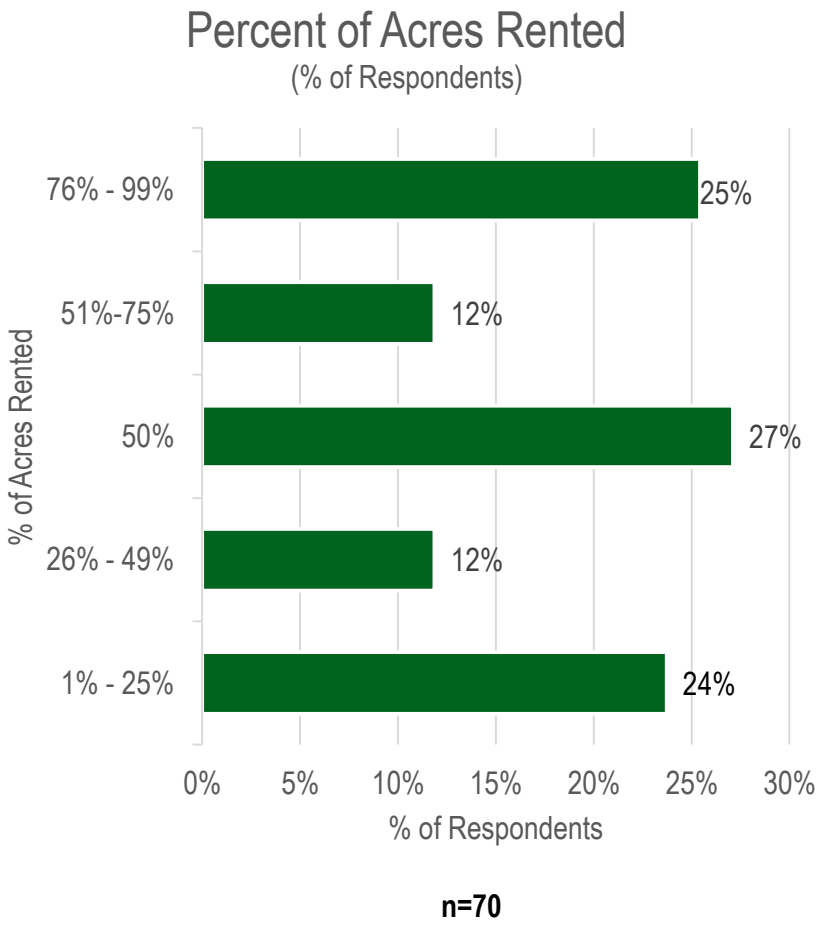
Soybean acres	n=
Less than 250	33
250 – 499	107
500 – 749	43
750 – 1,000	11
1,000 and above	7
Total	**201**

Average = 417.8

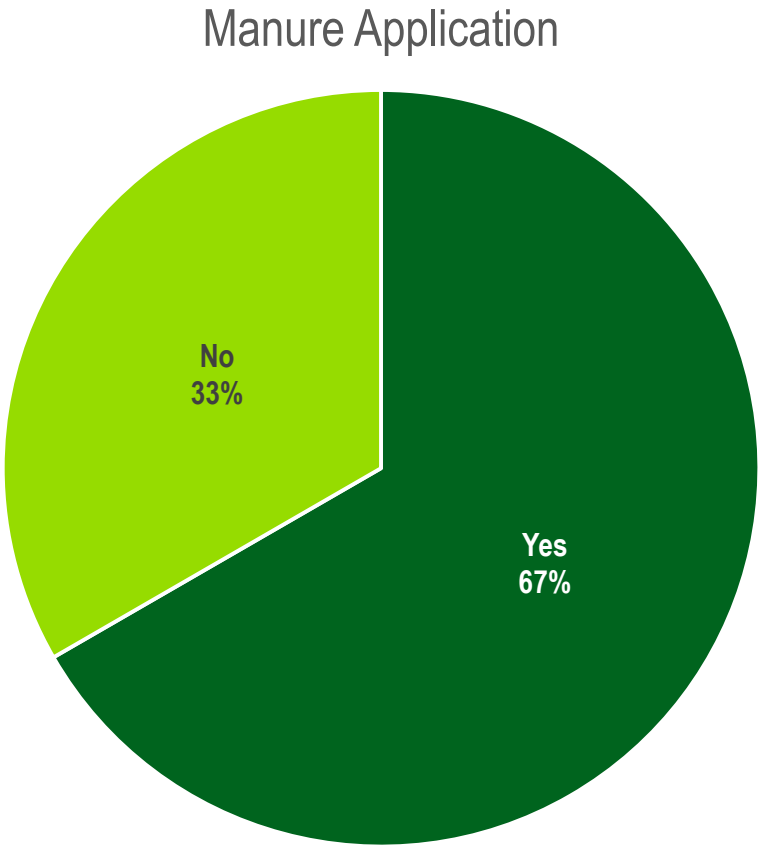
n=201

Almost two-thirds of respondents only farmed on land that they owned.





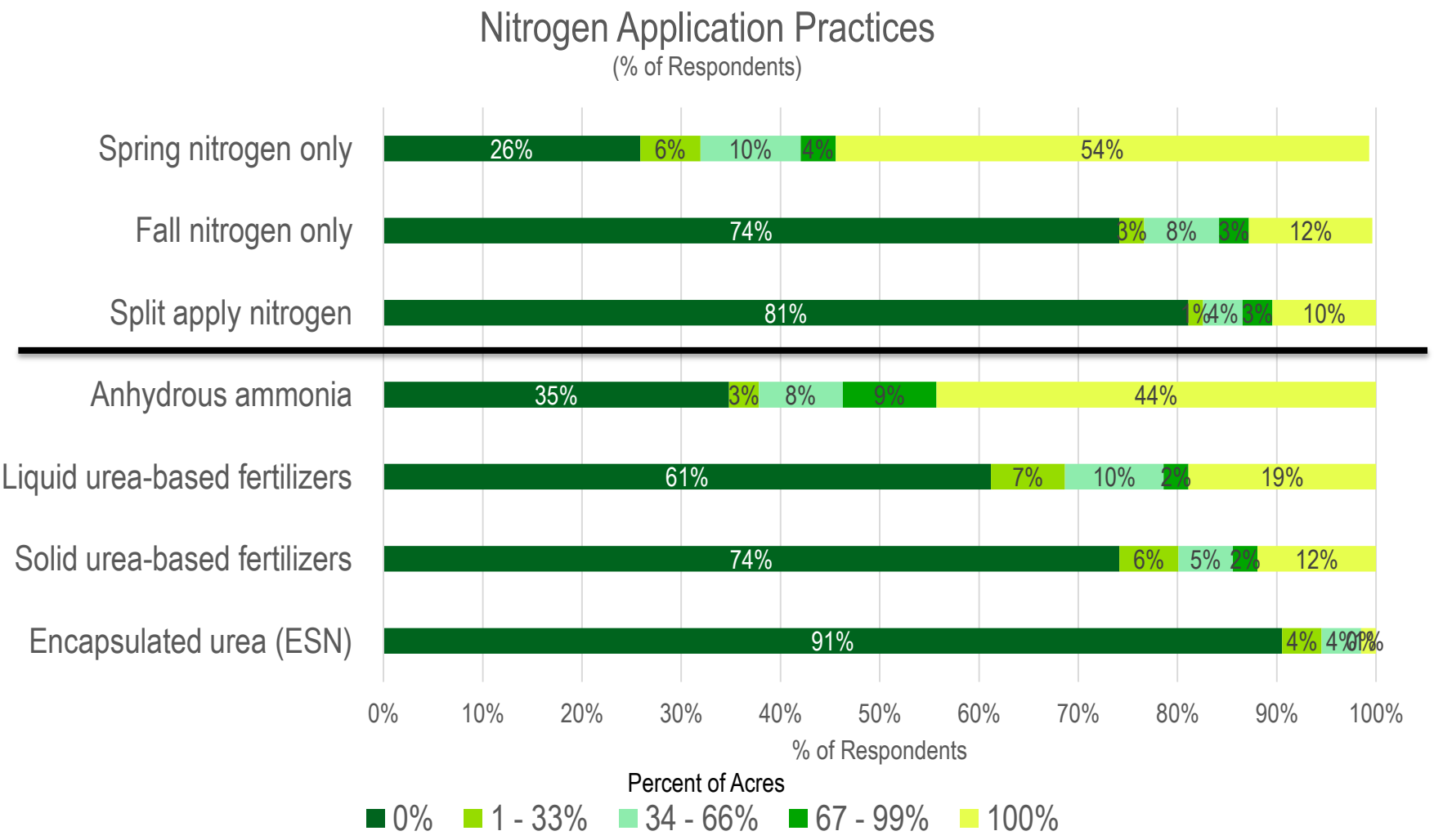
About two-thirds of respondents applied livestock manure on their crop acres.



Q5. Did you apply livestock manure to any of your crop acres in 2016?

n=201

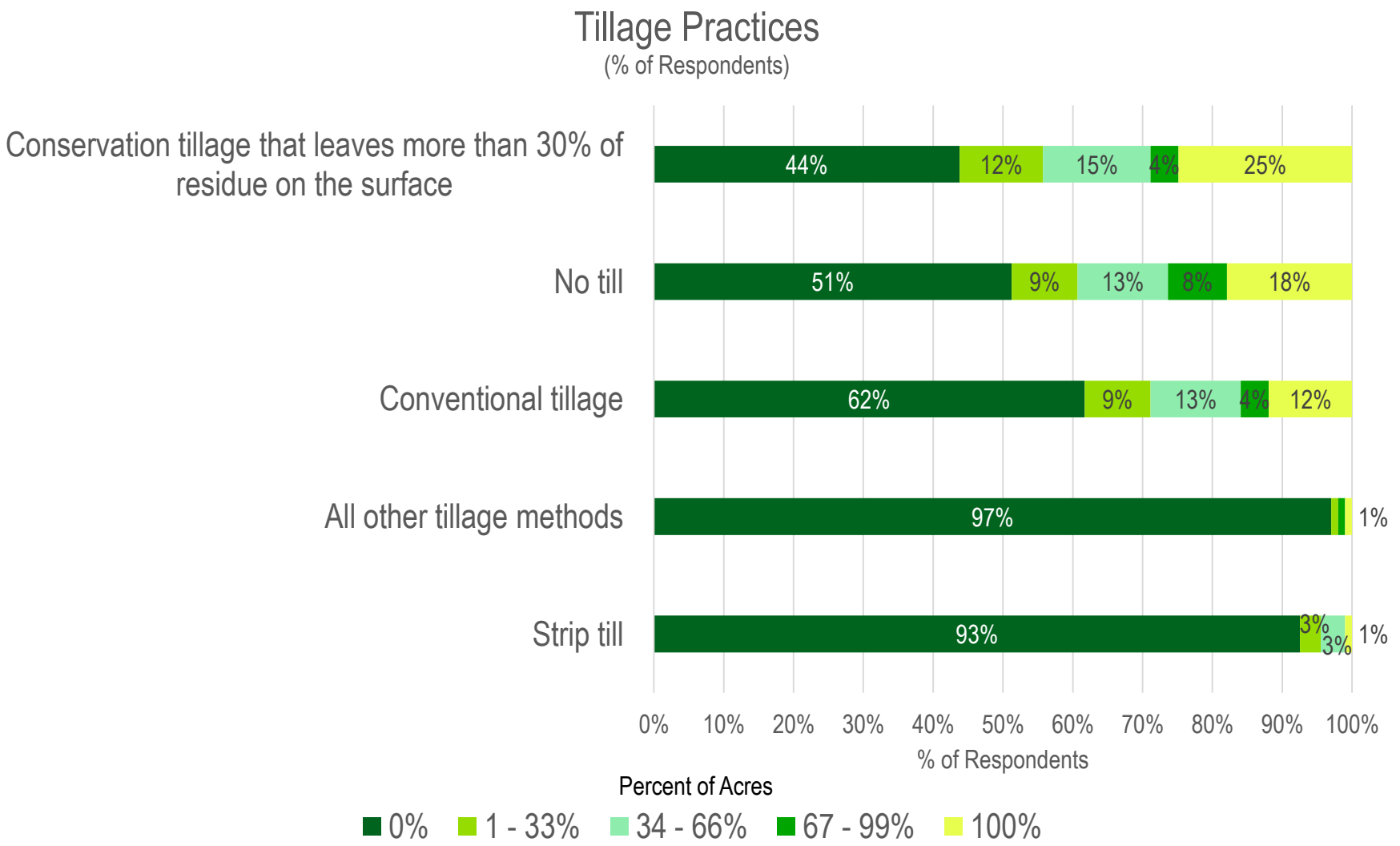
The majority of respondents put nitrogen on in the spring only, with anhydrous ammonia as the most used nitrogen source.



Q1. On what percentage of your corn acres did you apply as a nitrogen source….

n=201

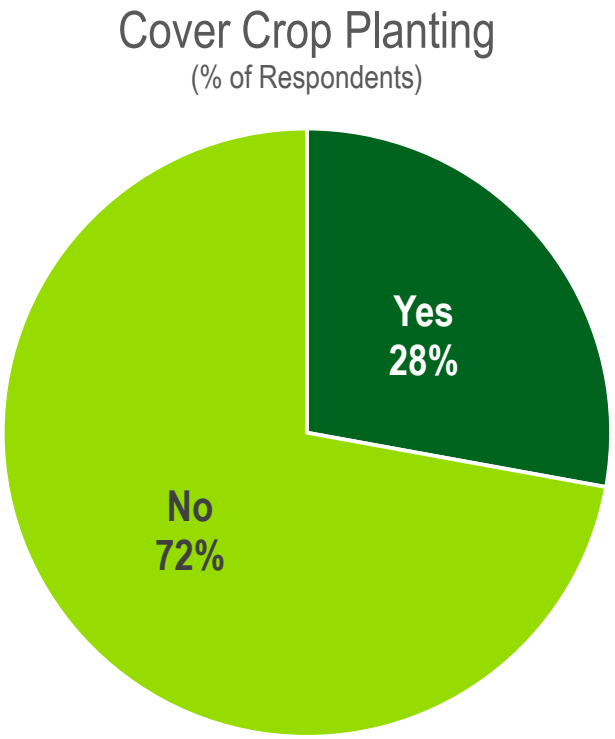
Conservation tillage was the most used tillage practice.

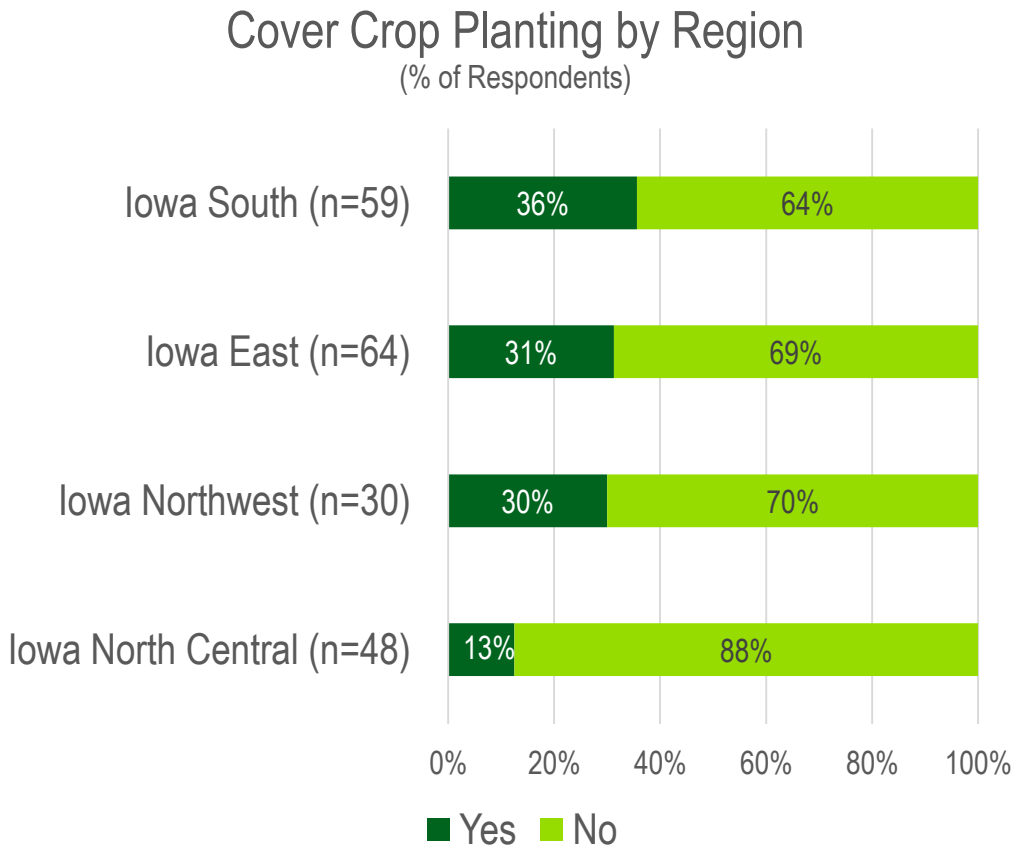


Q1. On what percentage of your corn acres did you apply as a nitrogen source….

n=201

Almost one-third of respondents plant a cover crop, with variations between the regions of Iowa.

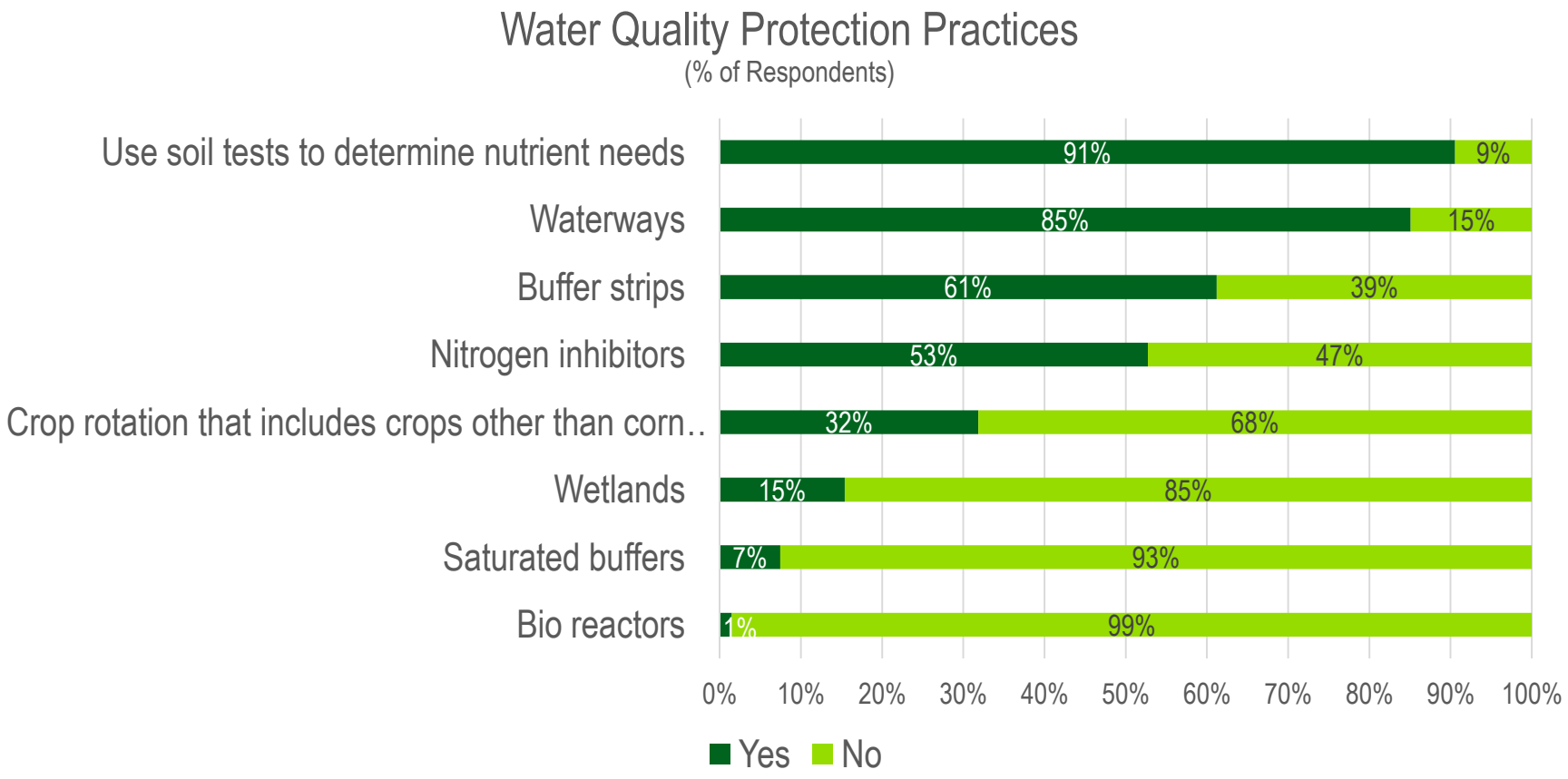




Q2. Did you plant any cover crops in 2016?

n=201

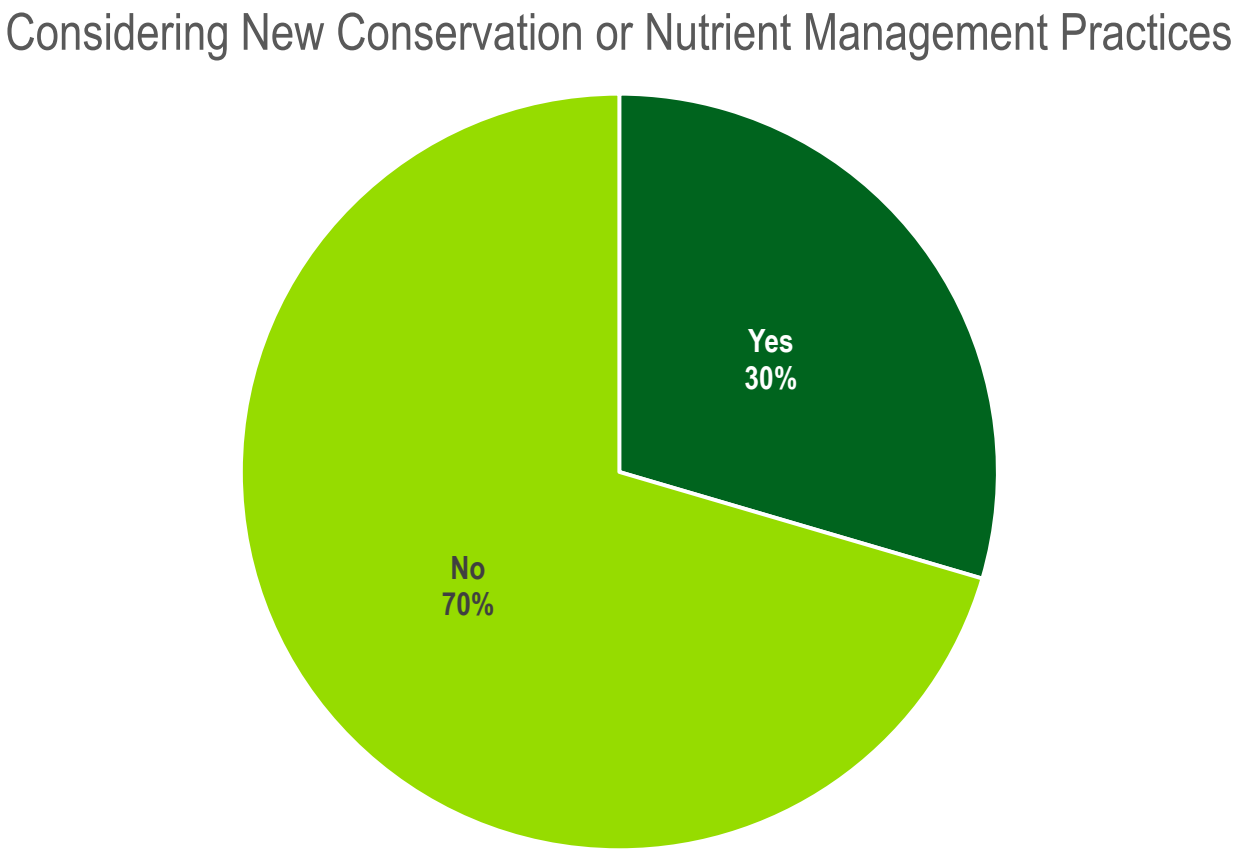
Almost all respondents are performing soil tests to determine nutrient needs.



Q3. I'm going to name some practices and I'd like to know if you used them in 2016 on any crop acres.

n=201

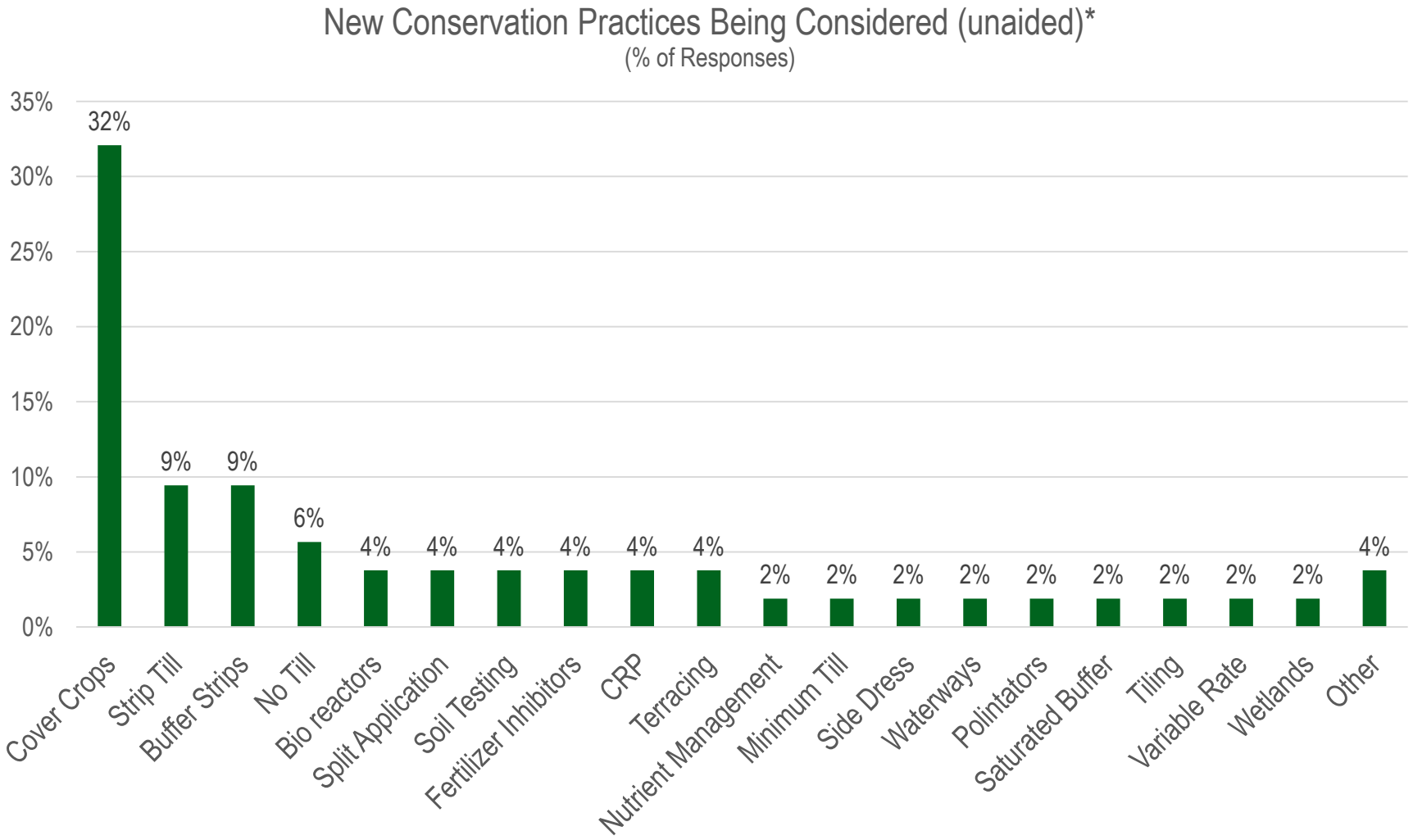
Less than one-third of respondents are considering new conservation or nutrient management practices.



Q6. Are there any conservation or nutrient management practices that you are considering starting to use for the first time in the next 3 years?

n=201

Cover crops are the most common new practice being considered.

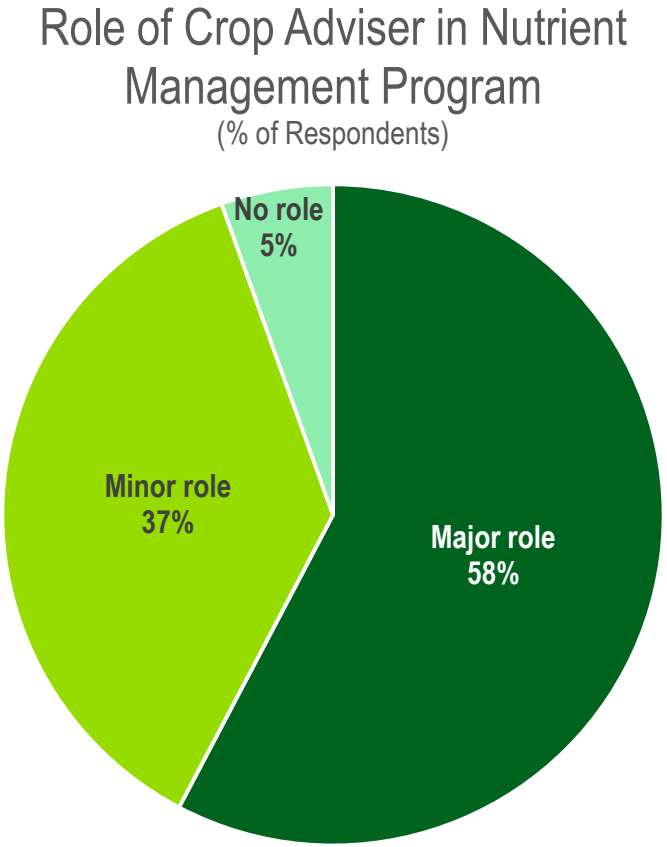


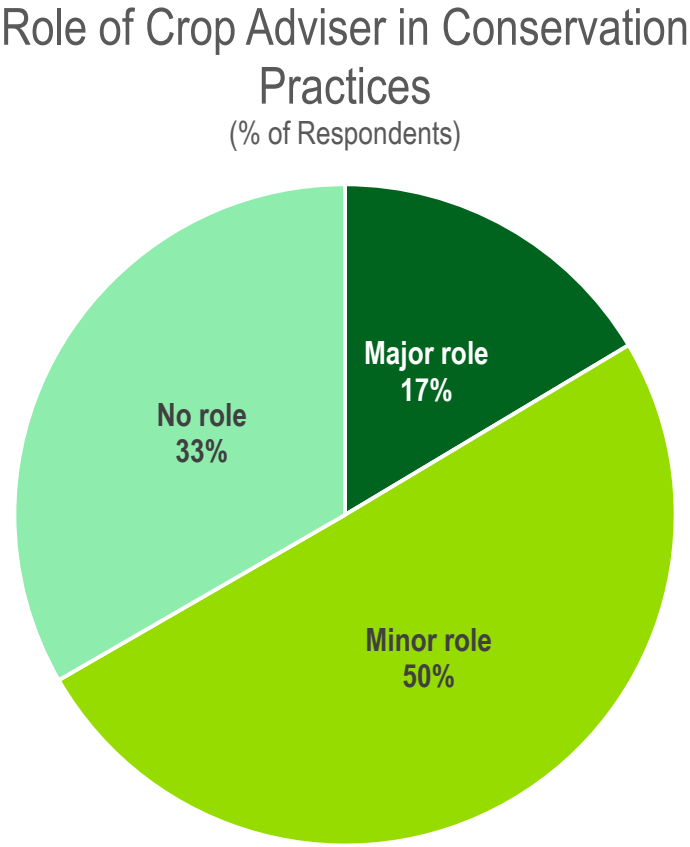
Q6A. Please describe what you plan to add and why. (open-end)

*Only asked to respondents who indicated they were considering new practices.

n=52

Crop advisers serve a larger role in nutrient management than in conservation practices, but are still involved.



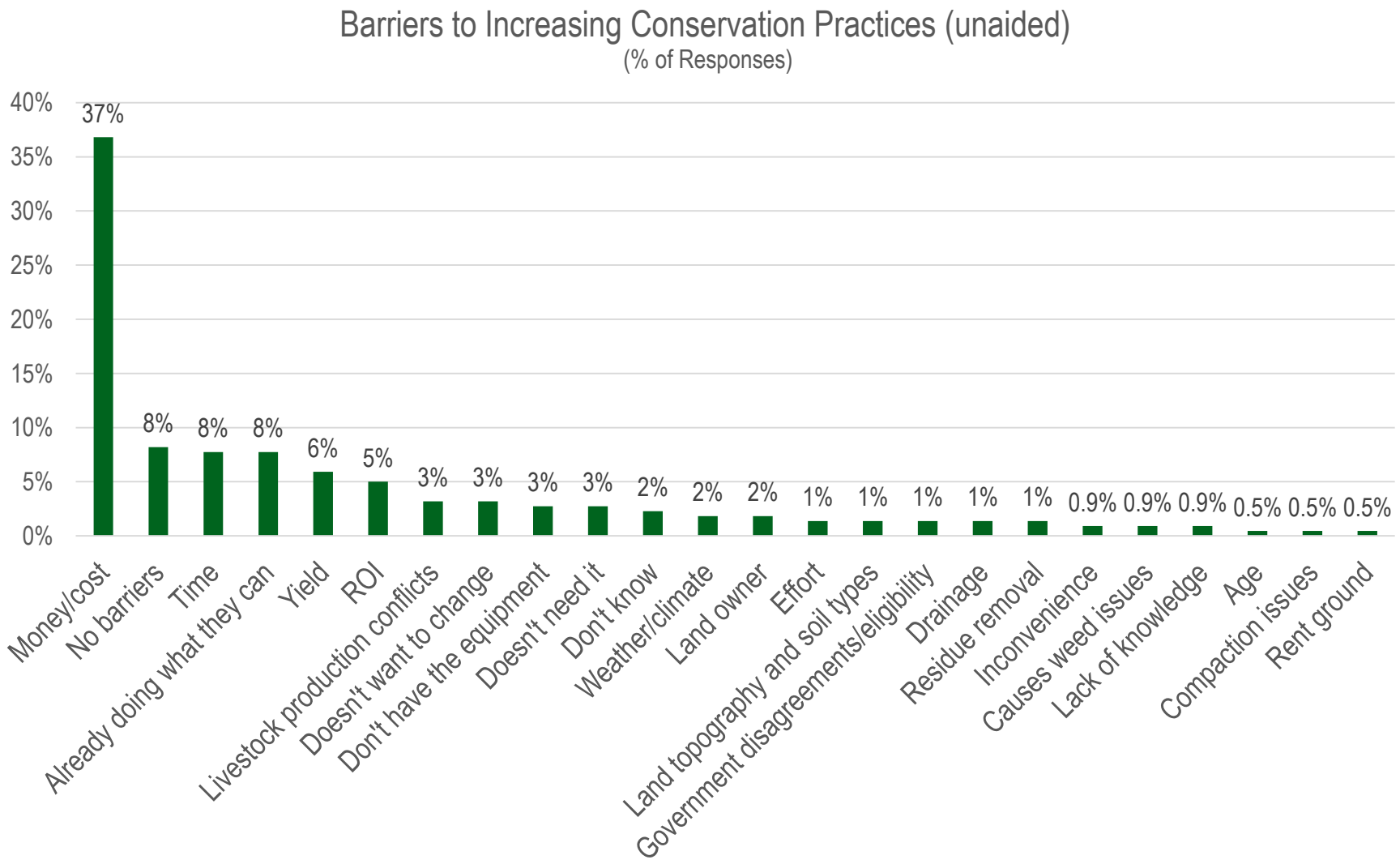


Q9. Would you say that your crop advisor or agronomist plays a major role, a minor role, or no role in decisions you make about your nutrient management program?

Q10. Would you say that your crop advisor or agronomist plays a major role, a minor role, or no role in decisions you make about your conservation practices?

n=201

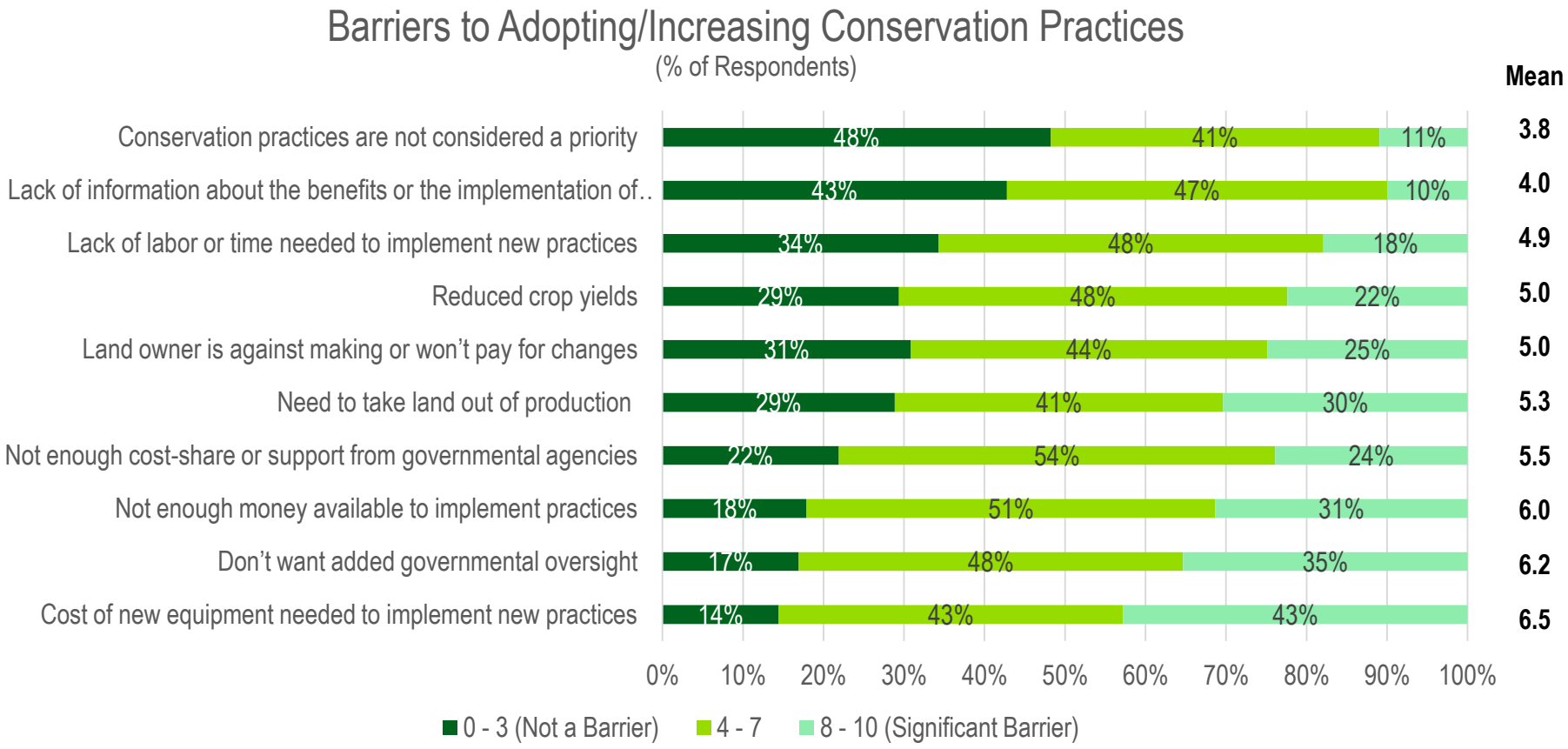
The cost of new conservation practices is the most stated barrier to increasing usage.



Q11. What are the most significant barriers keeping you from increasing your conservation practices? (open-end)

n=201

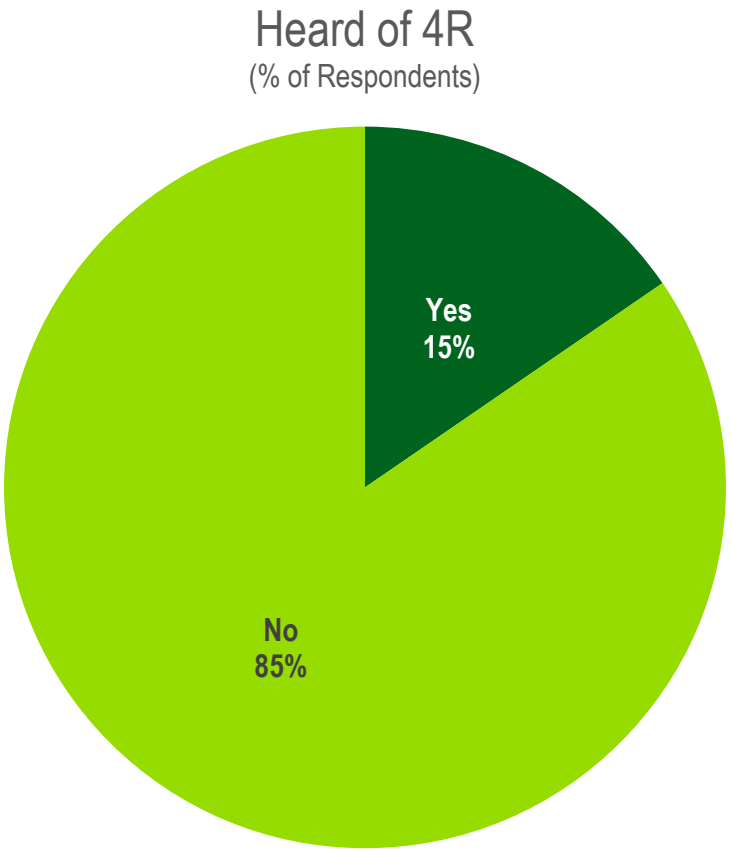
Most respondents considered cost to be a barrier to increasing conservation practices.



Q12. Next I'm going to read a list of things that might be considered barriers to farmers increasing their conservation practices. For each one, I'd like you to give it a rating on a scale of 0 to 10 where 0 means that this is NOT a barrier to farmers increasing conservation practices and a 10 means it is a SIGNIFICANT barrier.

n=201

The term ‘4R’ was known to only 15 percent of respondents.



Q13. I’m going to name a term and I’d like to know if you have heard of it before. This term relates to nutrient management practices. The term is “4R”. Have you heard of that term before?

n=201

The majority of respondents who had heard of '4R' were unable to correctly articulate the entire concept (unaided).

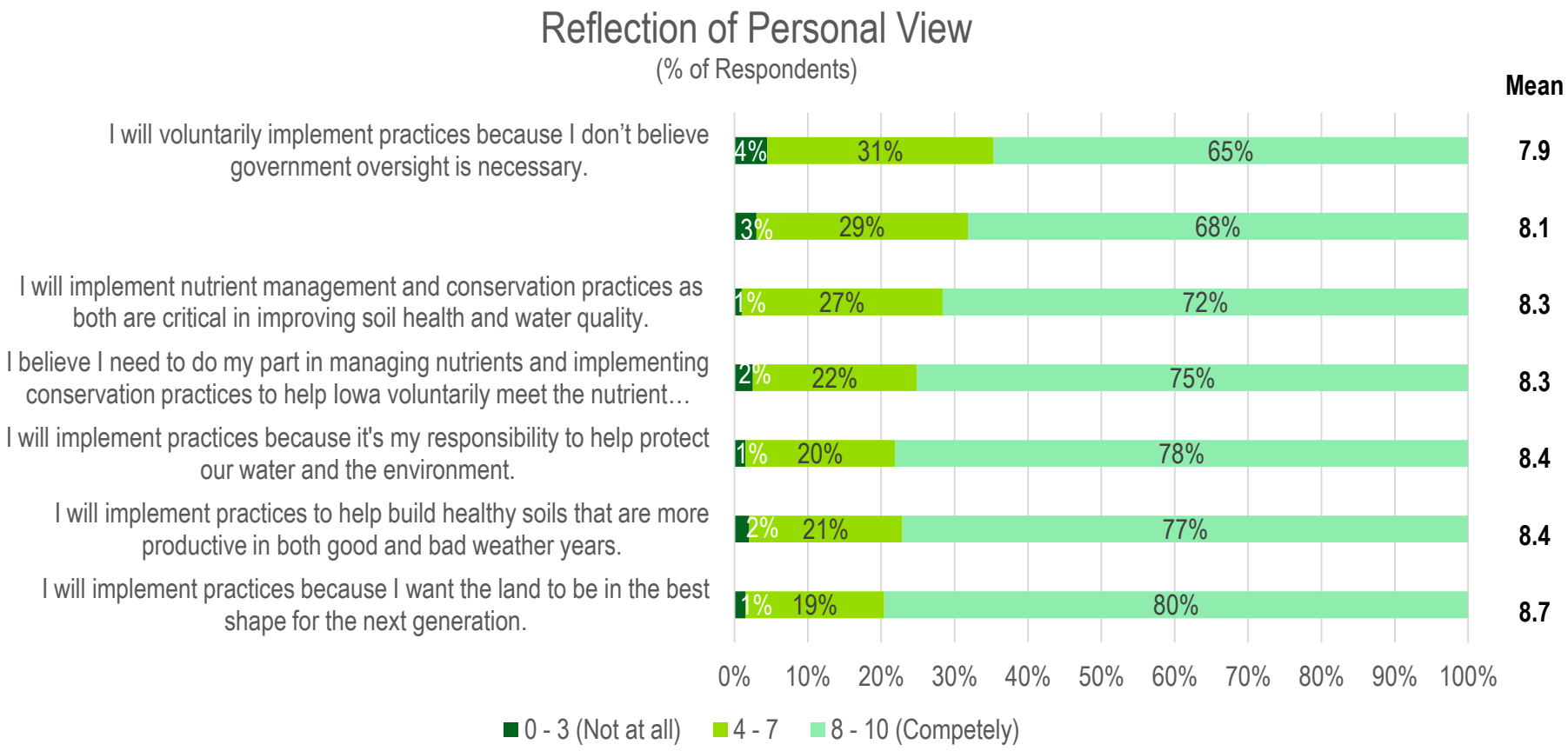
4Rs	3Rs	2Rs	Different 4Rs	Don't know or can't remember
n=3	n=9	n=3	n=2	n=13
	Time (9), Product (6), Place (5), Rate (4)	*Time (3), Product (1), Rate (1), Place (0)*		
– *Right place, right amount, right product, right time* – *Right product, right place right time, right amount* – *Right rate, right place, right time, right fertilizer*	– *Rate, right amount, right time, don't remember the last* – *Rate, time, application* – *Right product at the right place at the right time* – *Right product, right time, right practice* – *Right thing, right place, right time, right practice* – *Right time, right amount, right place* – *Right time, right product, right amount, and can't think of the fourth* – *Right time, right products, right place, and right source* – *Right time, right place, right form, and something else*	– *Right practice, the right time, can't remember it all* – *Right nutrients at the right time* – *right rate at right time*	– *Reduce, reuse, recycle, respond* – *Reuse, reduce, recycle*	

13B. I'm going to name a term and I'd like to know if you have heard of it before. This term relates to nutrient management practices. The term is "4R". What does it mean?

Only asked to respondents who indicated they had heard of 4R

n=30

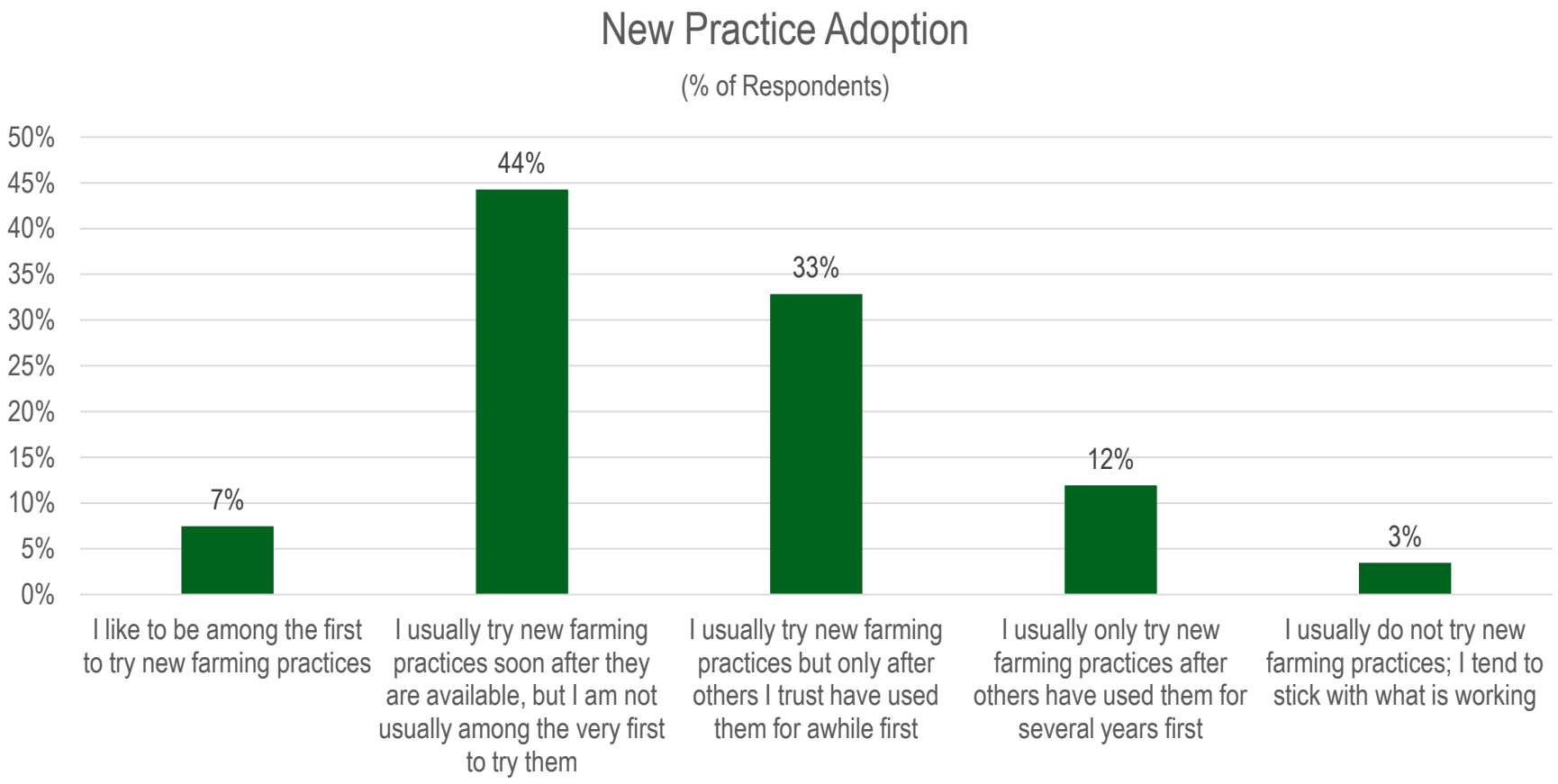
While most phrases scored high with respondents, ideals around stewardship reflected their own beliefs the most.



Q15B. How much does this message reflect your own personal views on soil and water conservation? Use a scale of 0 to 10 where 0 means not at all and 10 means completely. How would you rate that message?

n=201

Almost half of respondents indicated they try new farming practices soon after they are available.



Q16. Which of the following statements best describes how you personally feel about trying new farming practices?

n=201

Qualitative

Methodology

- **44 web-enabled in-depth telephone interviews averaging 50 minutes were completed.**
  - Respondents included both farmers (17) and crop advisers (27).
    - Farmers consisted of: 8 Conservation Champions, 9 Moveable Middle.
      - To qualify for the study, farmers had to farm 500+ crop acres, own 100+ crop acres, be less than 65 years old and be the primary decision-maker regarding nutrient management practices.
      - To qualify as **Conservation Champions**, respondents had to use multiple conservation practices.
      - To qualify as a **Moveable Middle**, farmers had to use one conservation practice and have a high likelihood of implementing an additional practice in the next 3 years.

Methodology

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Characteristics of farmers interviewed (17)

County	Total Crop Acres	Crops	Years Farming	Crop Adviser	CCA	Livestock
Sioux	560	C/S	45	Yes	Yes	2,000 cattle, 17,000 hogs
Lyon	500	C/S	12	Yes	DK	5,000 hogs
Worth	1,300	C/S	17	Yes	Yes	
Cherokee	540	C/S	40	Yes	Yes	4,000 hogs, 300,000 turkeys
Pocahontas	750	C/S	40	Yes	Yes	
Winneshiek	600	C/S	37	Yes	Yes	
Osceola	750	C/S, oats	38	Yes	Yes	hogs, cattle
Buchanan	1,800	C/S	19	Yes	Yes	cow/calf
O'Brien	900	C/S	37	Yes	DK	
Palo Alto		C/S	40	Yes	Yes	8,500 hogs
Kossuth	1,600	C/S	16	Yes	DK	
Calhoun	600	C/S	22	Yes	DK	hogs
Butler	1,000	C/S	39	Yes	Yes	
Fayette	600	C/S	26	Yes	Yes	hogs
Lyon	500	C/S	23	Yes	DK	500 cattle
Lyon	800	C/S	40	Yes	Yes	400 cattle
Howard	1,100	CS oats & hay	18	Yes	DK	500 cattle

DK: Don't Know

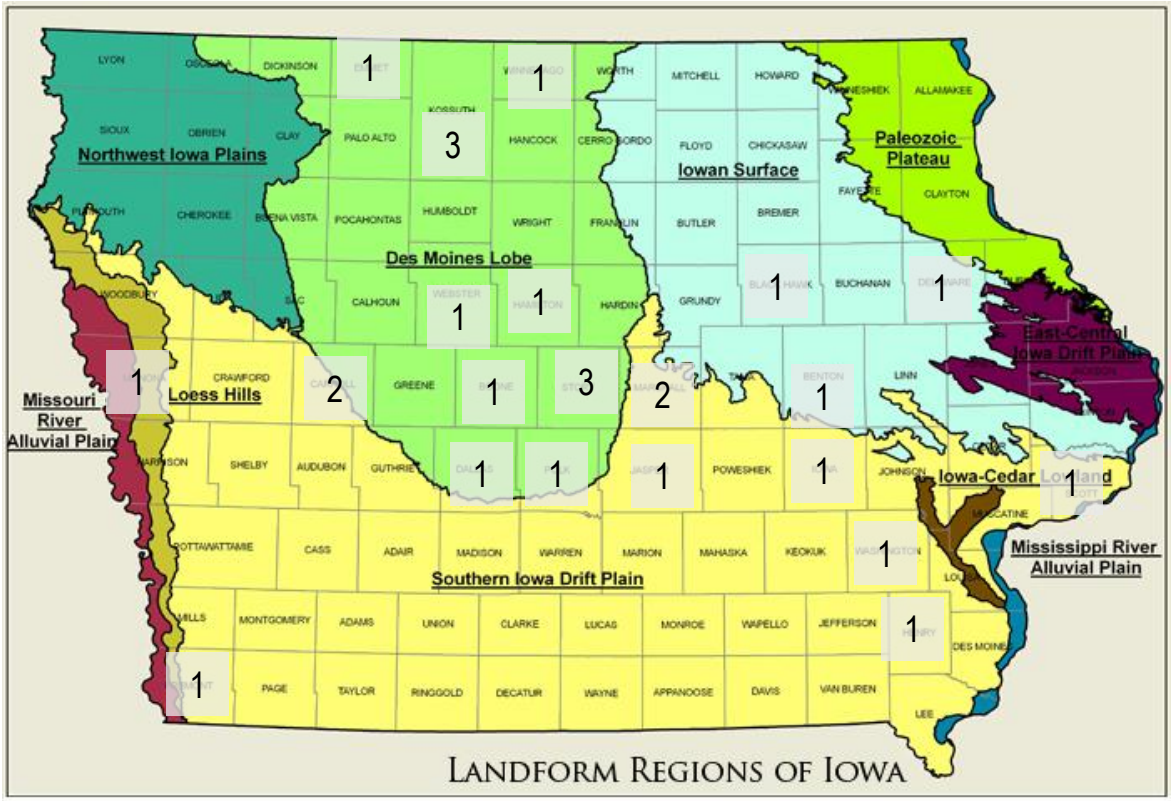
Methodology

- Of the 27 crop advisers, 7 were 4R Nutrient Management Specialist Certified through the American Society of Agronomy, and 5 were independent crop advisers.
  - To qualify for the study, crop advisers had to be a Certified Crop Adviser (CCA) through the American Society of Agronomy and make recommendations to farmers on nutrient management or conservation practices on a minimum of 15,000 acres annually.

Characteristics of Crop Advisers (27)		
Years Experience	Number of Farmers Worked with Annually	Total Number of Acres
3 to 30 years	15 to 150 Farmers	15,000 to 150,000

- **Message Testing**
  - 7 4R PLUS conservation messages were tested.
  - Each message was tested one at a time using Adobe Connect screen sharing application.

Location of CCA respondents, by county.



Findings, Farmers

What does soil health mean?

- Tilth
- Farmers most often mentioned soil that was high in organic matter or had increased organic matter as a sign of good soil health.
- Other farmers referred to the soil being loose, alive, with microbial activity, and good soil structure.
- Soil that was porous with good water-holding capacity.
- A few farmers pointed out that in their opinion, the term "soil health" is scientifically meaningless.

"Earthworms"

"Soil Health = Soil Wealth"

"Proper balance of nutrients."

"A term some organization is pushing to make conservation more palatable to farmers."

"Healthy Soil → Healthy Plants → Result of conservation"

Awareness of Iowa Nutrient Reduction Strategy

"Everyone has a responsibility to keep our water clean."

"I can only do what I can on my farm – most farmers are aware and know they have a hand in the INRS."

"Are all parties doing all they can? I know I'm not, I look to do better."

- 9 of 17 farmers stated awareness of the INRS.
- Conservation Champions were the most aware with 5 of 7 stating they were aware of the INRS.
- All believed farmers have some level of responsibility for meeting the goals of the INRS.
- Half of the farmers mentioned the ag supply industry, ISU Extension Service, and the DNR as also sharing the responsibility.
- All stated all parties, including cities, could be doing more to meet the goals of the INRS.
- There is confusion regarding how the INRS is going to achieve its goals.
  - Some believe the goal will be achieved by reducing loss of nutrients from the Iowa landscape.
  - Others believe the goal will be obtained by reducing the rate or the total amount of nutrients applied.

Familiarity with 4R

- 14 of 17 farmers had never heard of the term **4R**.
- However, once farmers heard the description of 4R, all were aware and familiar with the 4R principles.
- All stated the 4R principles are common agronomic practices that are important to them.
- Additionally, all stated that following proper N application practices would help but not completely meet the goals of the INRS.
- When asked, "Do you believe it will take both nutrient management and conservation practices to meet the goal of the INRS?" The majority of farmers stated that they believed it would help.

"Most farmers have a nutrient management plan and are trying to do the right thing."

"Both nutrient management and conservation will help, it it's a very high goal."

Message Testing
Farmers

“I will implement practices because it's my responsibility to help protect our water and the environment.”

- **Strengths:**
  - Speaks to the stewardship of the land, a point most farmers agree with.
  - Focuses on environmental benefits, and points to farmers’ ability to make a contribution.
  - Educational opportunity: Most farmers agreed with this statement, but lack the knowledge to implement change on their land.
- **Weaknesses:**
  - The statement places all the responsibility on the farmer; it needs to be more inclusive and state a shared responsibility.
  - The farmer has to want to implement conservation practices; more education is needed on conservation.

“It is my responsibility.”

“We need to take care of what we got.”

“I will do my part but it is everyone's responsibility.”

“I will implement practices because I want the land to be in the best shape for the next generation.”

- **Strengths:**
  - Farmers believe this statement builds awareness and concern for the future, and promotes the need for a long-term conservation plan for each farm.
  - It is believed by most farmers; this statement is important and relevant to landowners and all farmers.
- **Weaknesses:**
  - Consider changing **“best shape”** to “most nutrient efficient.”

“Keeping the land up with good stewardship.”

“Does this mean productive with healthy soils, or straight creeks with square fields and mowed ditches?”

"I will implement practices to help build healthy soils that are more productive in both good and bad weather years."

- **Strengths:**
  - Conservation champions found this statement to be true – conservation will help regardless of what weather events unfold.
  - A number of farmers mentioned increased organic matter yielding increased water-holding capacity of the soil.
- **Weaknesses:**
  - It was believed that farmers are just now starting to understand the importance of healthy soil, and that more education is needed.

"Farmers should ask themselves, can my field hold a 2-3 in. rain?"

"Healthy soils are prepared for whatever weather brings."

"It is easier farming if you can get there."

"I will implement nutrient management and conservation practices as both are critical in improving soil health and water quality."

- **Strengths:**
  - Farmers believed that improved soil health benefits the farmer.
  - Plus this leads to an improvement in water quality - a benefit to the public.
- **Weaknesses:**
  - It is implied that soil health means improved yields; not all farmers believe that is a true statement.
  - While nutrient management is a best practice, a few farmers stated farmers have implemented nutrient management many years ago, and farmers question how much improvement can be achieved.

"There is something in this statement for everyone."

"Nutrient management is not new."

Findings, Certified Crop Advisers

What does soil health mean to a crop adviser?

- Tilth - limit compaction.
- Productivity.
- Building and maintaining organic matter, balanced nutrients, increased soils structure and porosity.
- Treating soil like a living organism, microbes, good growing conditions, “bio-life.”
- Ability for soil to function as an ecosystem.
- Politically correct term invented by activists.

“Buzzword”

“We killed our soil – need to feed it again.”

“Preserve what you have – it is not easy to replace.”

“Don’t like it, personifies soil with health label.”

Crop adviser awareness of Iowa Nutrient Reduction Strategy

"If farmers are going to be responsible, the practices need to work, they need to be proven, and need to pay in the long run."

"Farmers will have to be accountable for the practices they choose to implement."

"Younger farmers may be more inclined to take on the responsibility than older farmers; younger farmers have a longer time frame."

- 27 of 27 CCA's stated their awareness of the INRS.
- All CCA's believed farmers have a shared responsibility for meeting the goals of the INRS.
- CCA's also stated other parties play a key role in meeting the goals of the INRS.
- CCA's believe Ag retailers have a key role in helping meet the goals of the INRS.
- Other organizations often mentioned: ISU Extension Service, the DNR and NRCS sharing the responsibility.
- As did farmers, CCA's stated cities, share the responsibility.
- All CCA's stated all parties could be doing more to meet the goals of the INRS.

Crop adviser familiarity with 4R.

- 24 of 27 CCA's recognized and correctly defined the term **4R.**
- Most CCA's either didn't believe or weren't sure that following the 4R's of proper N and P application would meet the goals of the INRS.
- Only slightly more CCA's believe the addition of conservation practices would increase the probability of meeting the INRS goals.
- CCA's that are 4R Nutrient Management Specialist certified, were not sure it was worth it at this time, but believe it will have more credibility in the future.

"NO…too many unknowns, not sure it will all work as expected, the model may have been faulty."

"The issue is most farmers are already following best practices, and have been for 10 years or more; how much more improvement is there that can be made?"

Message Testing
Certified Crop Advisers

"I will implement practices because it's my responsibility to help protect our water and the environment."

- **Strengths:**
  - This message will have appeal to conservation-minded people or those that are looking to do the right thing.
  - Speaks to the conservation ethic many farmers identify with.
- **Weaknesses:**
  - Most CCA's find this message to be most appealing to farmers that already are conservation-minded; it most likely will not increase awareness and adoption of additional conservation practices.
  - Many suggested changing "**my**" responsibility to "**our**" responsibility.

"Need to own it, do the right thing."

"Stewardship is our responsibility."

"This one is for the true believer."

“I will implement practices because I want the land to be in the best shape for the next generation.”

- **Strengths:**
  - CCA’s see this message as a long term commitment, which aligns with many famer who are thinking about the next generation of the family having the option to take over the farm.
  - Positive statement, speaks to the idea of being a good steward of the land for the next generation.
  - CCA’s stated the message was relevant to their customers and to them.
- **Weakness:**
  - This idea has been true for many years; it most likely doesn’t lead to any new ideas or additional implementation.

“Very relevant to family farms.”

“This is why we have the level of conservation we currently have.”

"I will implement practices to help build healthy soils that are more productive in both good and bad weather years."

- **Strengths:**
  - CCA's liked the linkage of healthy soils to increased production; implies greater opportunities for profit.
  - As weather events get more severe, farmers are more interested in how to prepare their farm for more of these types of events.
- **Weaknesses:**
  - Difficult to show short term R.O.I.; building healthy soils is a long term effort. Farmers need to be committed to make it work.
  - A number of CCA's pointed out that farmers are less likely to be motivated by this statement if the farm is rented.

"Talking about healthy soils is a great conversation starter."

"Healthy soils are more productive and are linked to higher yields."

"Farmers need to learn how to hold more water in the soil to reduce runoff."

"I will implement nutrient management and conservation practices as both are critical in improving soil health and water quality."

- **Strengths:**
  - Improved soil health is the product of conservation practice, leading to more productive soil.
- **Weaknesses:**
  - CCA's stated most nutrient management and conservation practices have been around for many years; the easy, low cost, high R.O.I. practices have been done. Improved soil health may not be enough to get additional adoption.

"Healthy soils hold nutrients and are more productive."

"It is hard to measure improved water quality and difficult to see benefits."

Overall Conclusions

CCA's are well aware of the Iowa Nutrient Reduction Strategy, while Iowa farmers are not as engaged.

- **Qualitative: All CCA's** were aware of the Iowa Nutrient Reduction Strategy, while only slightly more than **half the farmers** were aware of the INRS.
- Both groups believed farmers had a role in meeting the goals of the INRS; **farmers** were more likely to **believe they were doing all they could** to help. **CCA's** believe while **farmers had made considerable progress**, they had plenty more that could be done.
- Most farmers believe:
  - They **have made significant improvements** in conservation practices
  - Are **doing all they can**, and
  - Their farm is **not part of the problem**, so why spend the money to improve?
- There is **no mechanism** to alert farmers their practices could use improvement.

Some farmers are planning to add a conservation practice but cost is a factor.

- 30 percent of farmers indicated they were considering starting a new nutrient management or conservation practice in the next three years.
- Cover crops is the No. 1 practice being considered.
- The cost of conservation practices is by far the biggest barrier.

CCA's are much more aware of the meaning of the 4R's, than farmers.

- **Almost 90% of CCA's** knew what 4R meant.
- Less than 20% of farmers knew what 4R meant.

Farmers are more optimistic than CCA's about using 4R PLUS practices to meet goals.

- **Farmers were more optimistic** about their ability to use **nutrient management** to meet the INRS goal for water quality (more than half believed this is possible). However, **most CCA's did not** believe it was possible to meet the goals of the INRS through nutrient management only.
- When the respondents were asked if **both nutrient management and conservation practices** would be necessary to meet the goals of the INRS, essentially the 4R PLUS principles, the majority of farmers believed the goal was obtainable. However, when asked the same question, only a few additional CCA's believed it was possible.
- Most likely, the farmers we spoke to were more positive about conservation than the farmer base the CCA respondents work with on a day-to-day basis. This is because CCA's have a broad and varied list of customers. For this study, we screened to find farmers that were more conservation-minded than the average farmer.

Summary of 4R PLUS Message Testing

- Two messages stood out to both CCA's and farmers as more relevant and were more likely to generate awareness and adoption of conservation practices.
  - ***"I will implement practices because I want the land to be in the best shape for the next generation."***
    - References of the **next generation** speaks to the emotional sentiments of the family farm.
    - It also evokes the stewardship and conservation ethic many respondents saw as very positive.
    - Scored the highest in the quantitative survey on both relevance and reflection of personal viewpoint.
  - ***"I will implement practices to help build healthy soils that are more productive in both good and bad weather years."***
    - The linkage of "healthy soils → productive" is a benefit to the farmer.
    - As weather events get more severe, farmers are becoming more interested in how to prepare for these types of weather events.
      - Conservation champions thought this was true and that conservation practices would help regardless of what weather events unfold.
    - Scored the second highest in the quantitative survey on both relevance and reflection of personal viewpoint.