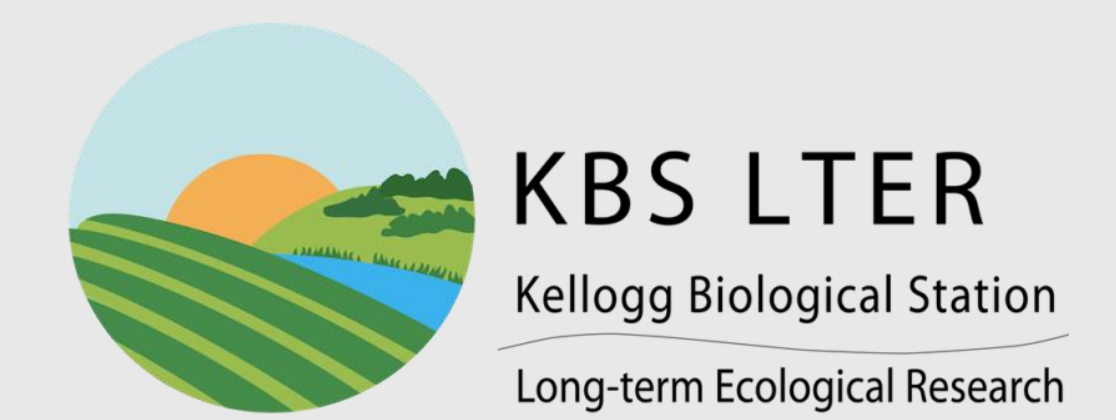


# Investigating the Differences Between Knowledge, Education, and Experience for Agricultural Management Practice Use

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## Introduction

- Knowledge is an understudied aspect of farmer conservation practice adoption, but has the potential to be an important component, both directly on practice adoption and indirectly through attitudes.
- My goal in this poster is to make a preliminary exploration of recently collected survey data that includes a question on knowledge, as well as questions on many aspects of farm management.

## Research questions

- What is the relationship between knowledge, education, and experience among farmers?
- Are these three related concepts functionally the same for predicting the use of conservation practices or are they different?

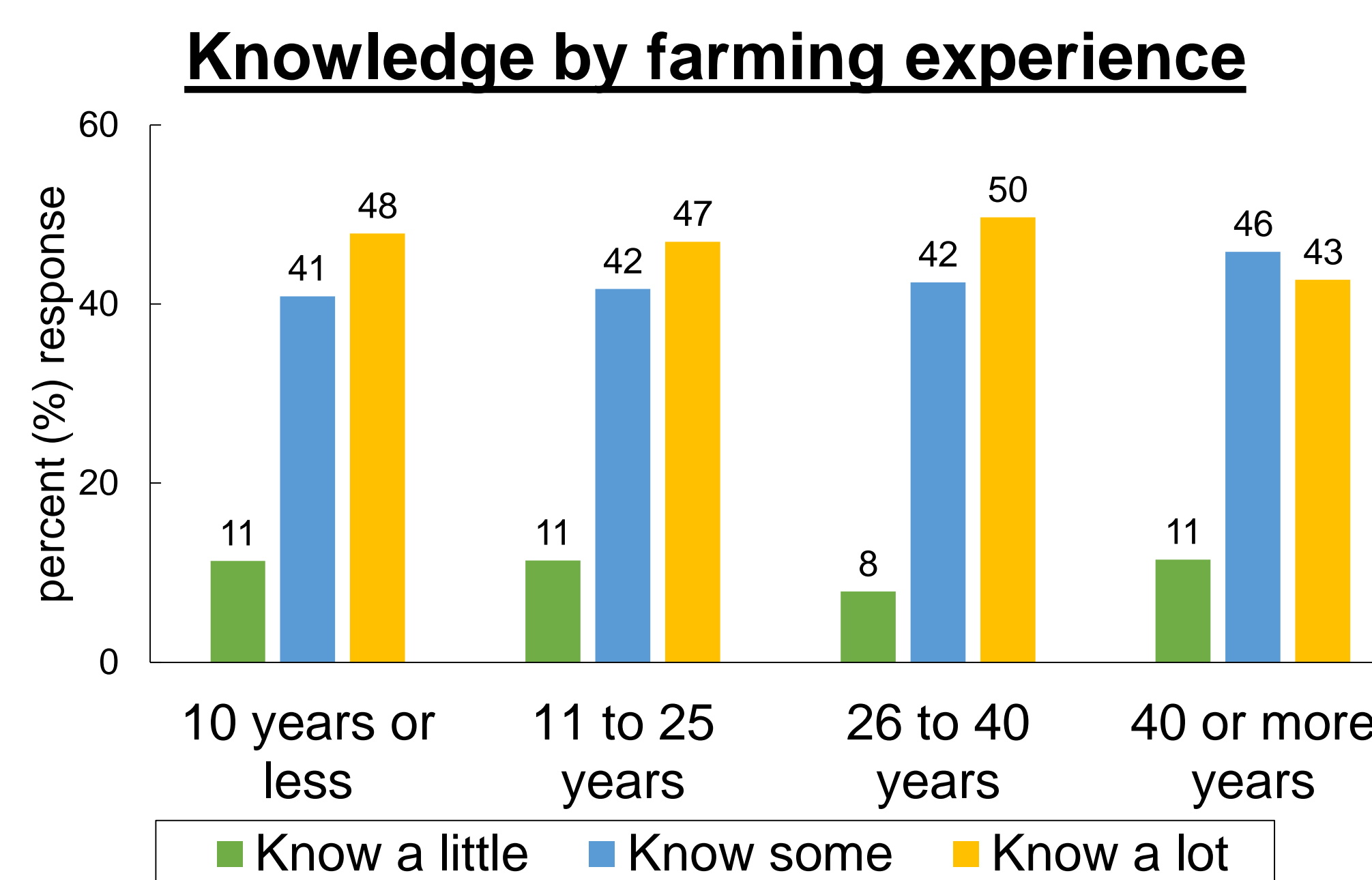
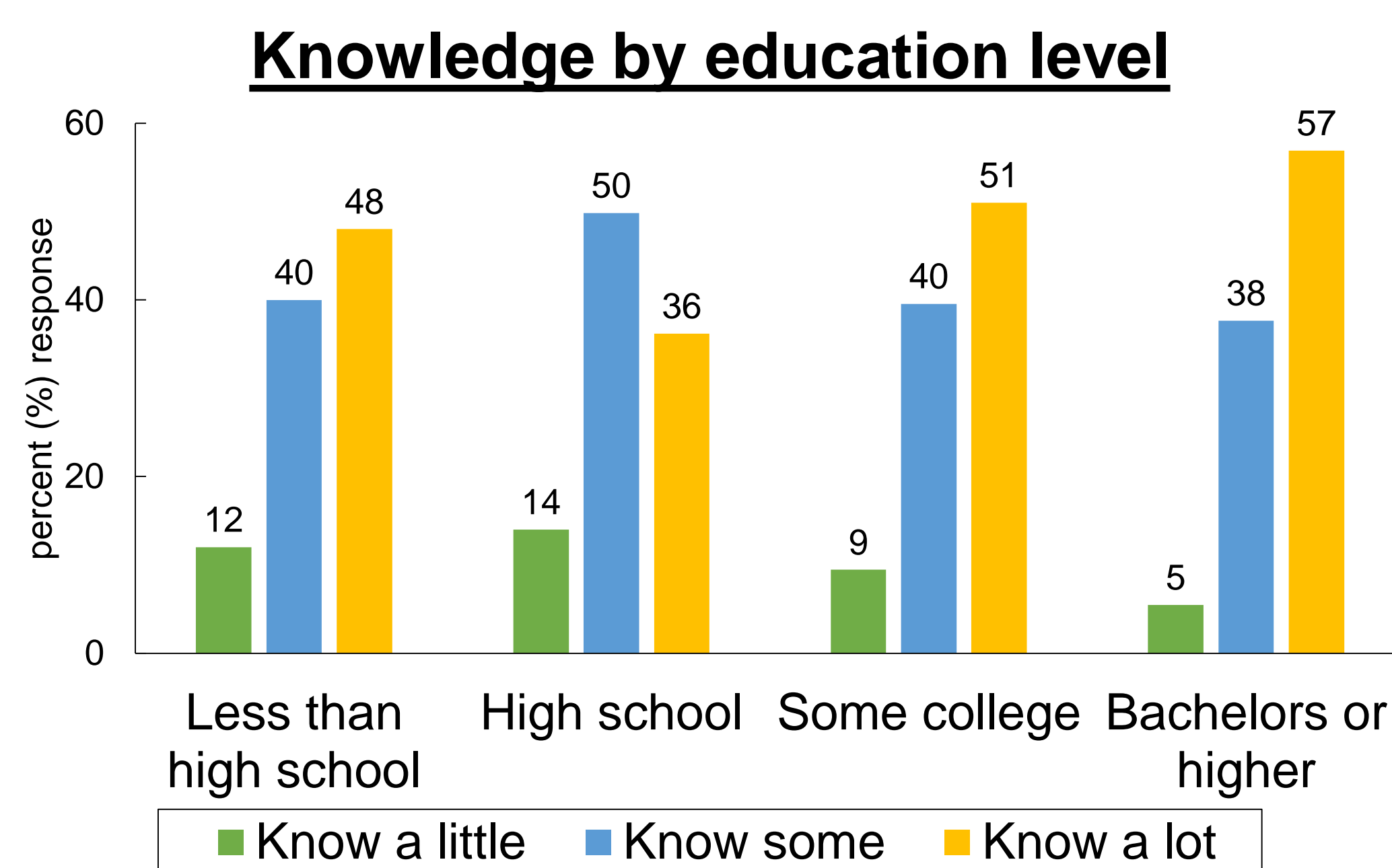
## Data and methods

- 2017 LTER Crop Management Survey
- Sent by mail to 10,582 corn growers in Illinois, Indiana, Michigan, and Ohio
  - Asked about 2016 growing season
  - Response rate = 31%
  - For this analysis N = 1661, data is not weighted
- Knowledge was measured in response to the question “On nutrient and soil conservation, I feel I know...” on a 5 point scale with 1=nothing at all and 5=a great deal; 1 and 2 responses were collapsed into “know a little,” 3 responses were labeled “know some,” and 4 and 5 responses were collapsed into “know a lot.”
- In logistic regression “use” is considered “used in the past,” “used sometimes” and “used regularly”
- Since knowledge is self-reported it can be interpreted as a measure of confidence in what they know.

## As an example, how does regularly planting a cover crop over winter track with levels of knowledge, education and experience?

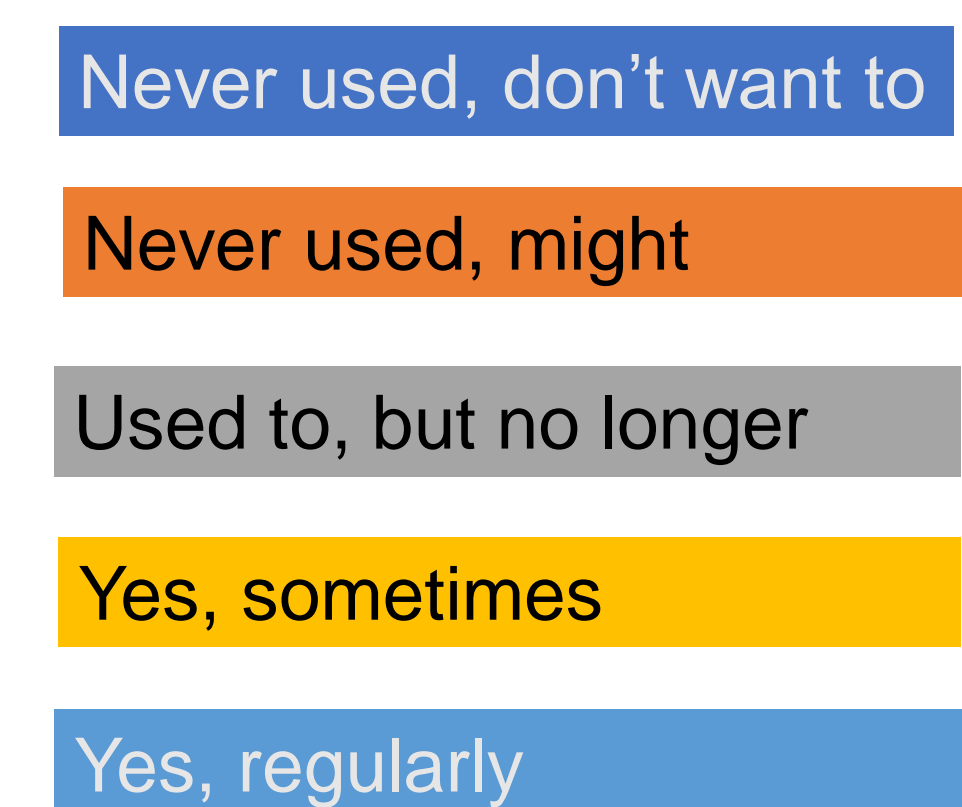
- Farmers with higher self-reported knowledge use cover crops at higher rates
- Farmers with less than a high school education use cover crops at the highest rate
- Farming experience does not appear to influence cover crop use

## How does education and farming experience relate to the level of self-reported knowledge of nutrient and soil conservation?

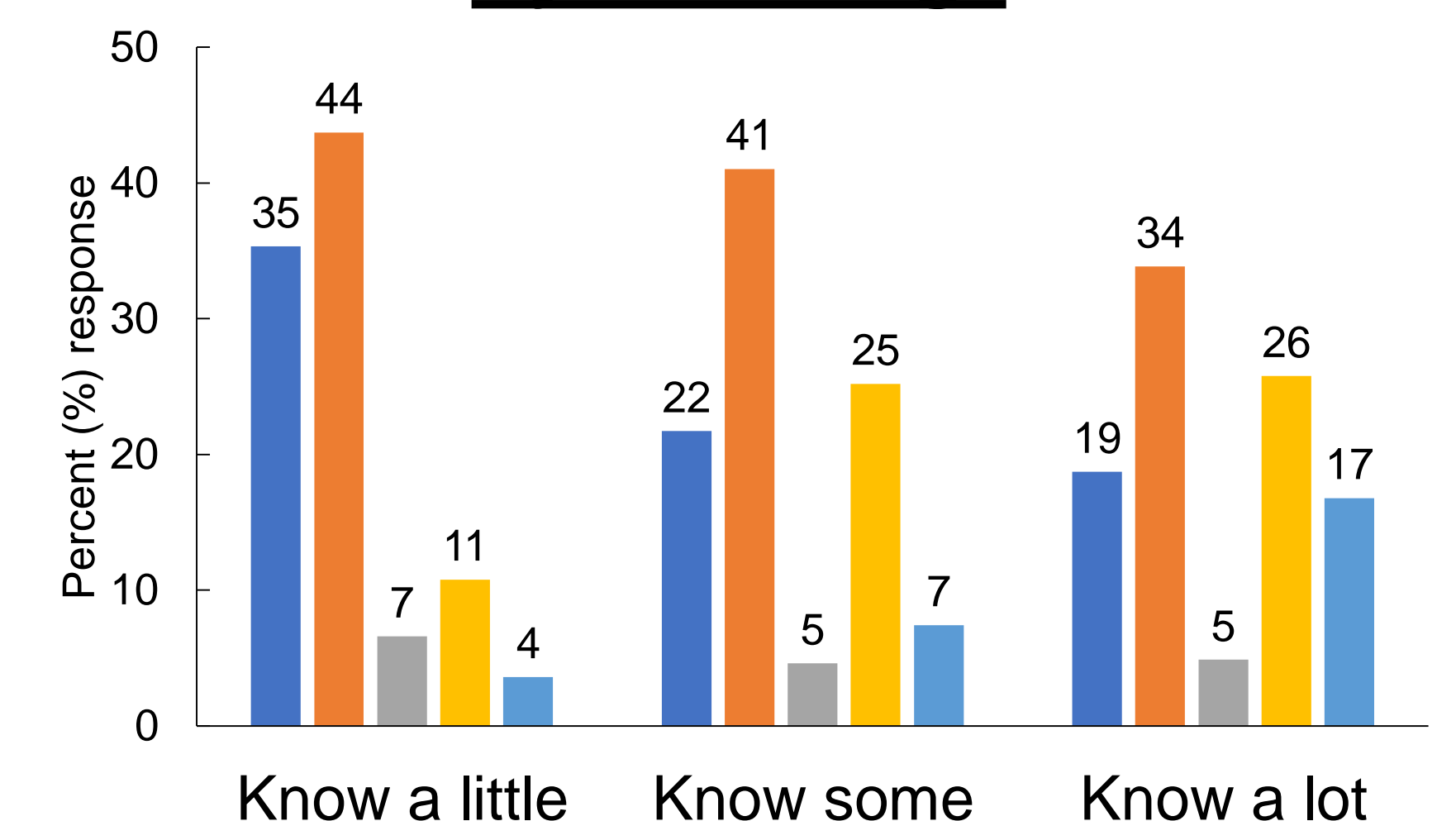


- Education a not a very good predictor of high knowledge confidence
- Respondents with less than a high school degree still report quite high knowledge

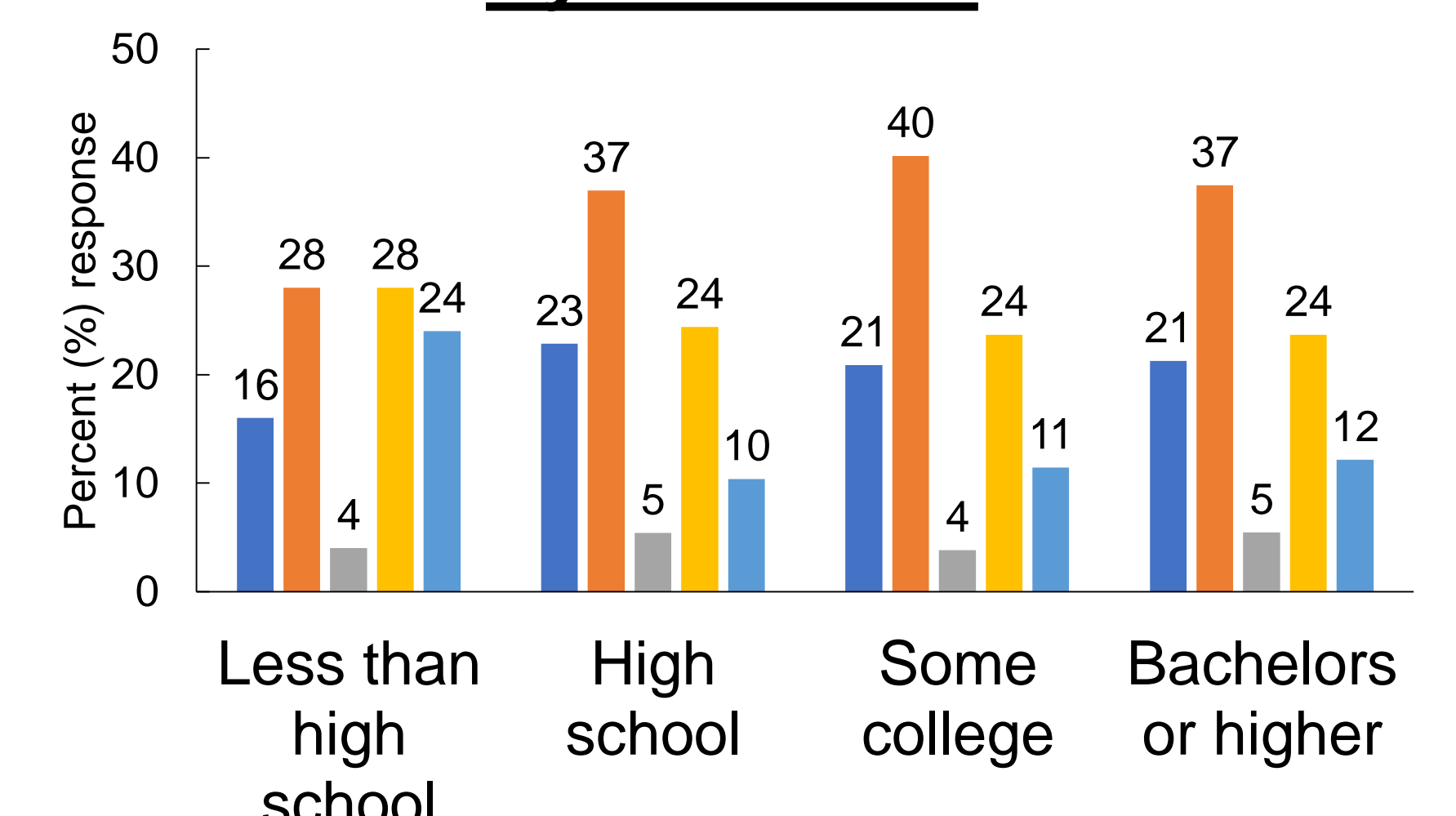
- Farming experience a very poor predictor of knowledge confidence
- Very little variation across experience groups



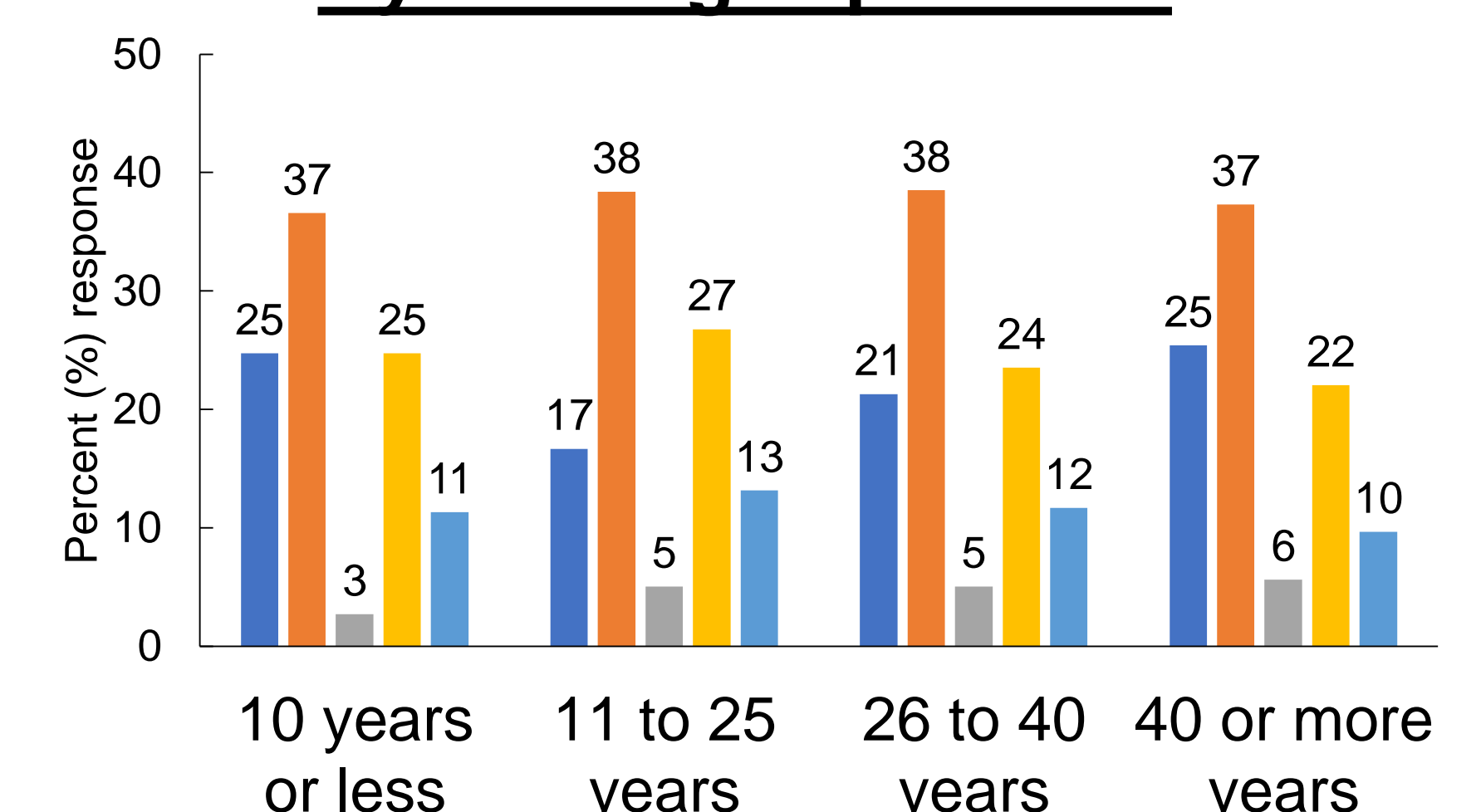
## By knowledge



## By education



## By farming experience



## Which measure is the best predictor of practice use?

**Table 1. Odds ratios from logistic regression of high knowledge, college degree or higher, and 40 years or more of farming experience on the use of 9 practices.**

	High knowledge	Bachelors degree or higher	40 years or more farming experience
Pre-sidedress nitrate (PSNT) in corn years	2.084***	0.806	1.038
Apply N using variable-rate applicator	1.922***	0.882	1.069
Apply P/K using variable-rate applicator	2.066***	0.994	0.959
Apply foliar fertilizer	2.011***	0.794*	0.597***
Use soil nutrient maps	2.797***	1.372*	0.719*
Get or make yield maps	2.637***	1.521***	0.816†
Use aerial scouting of satellite imagery	2.780***	1.361*	0.782†
Use a variable rate seeder	2.889***	1.342*	0.954
Regularly plant a cover crop over winter	1.735***	0.965	0.860

† p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001 (two-tailed)

## Conclusions

- Knowledge (even self reported) is a better and more consistent predictor of conservation practice use than level of education or farming experience, though the later are important for some practices.
- Farmers with more experience may be less likely to use conservation practices.
- Future work should include farmer attitudes and explore other predictors of farmer knowledge.