

Barriers to Adoption of Environmental and Social Stewardship

Ray Massey

Agricultural Business and Policy
Extension

University of Missouri



Prokopy, L.S., Floress, K., Arbuckle, J.G., Church, S.P., Eanes, F.R., Gao, Y., Gramig, B.M., Ranjan, P., and Singh, A. S. (2019). **Adoption of agricultural conservation practices in the United States: Evidence from 35 years of quantitative literature.** *Journal of Soil and Water Conservation.* 74(5), 520-534. <https://doi.org/10.2489/jswc.74.5.520>

“Another important observation drawn from our review is that quantitative research has not focused enough attention on barriers to adoption, especially cultural (e.g., community norms) and structural (e.g., policy-market interface) barriers to behavioral change ... most independent variables included in adoption studies are hypothesized to be positive predictors.”



My assumptions and objectives:



This audience wants to increase environmental and social stewardship on farmland.



This audience is concerned primarily with policy implications and applications.



My objective: present research information that has identified various barriers to incorporating conservation




I have studied environmental and social stewardship mainly within the context of leasing.

Conservation practices

- Annual or multi-year?
- Private or social benefit?
- Tenant or landowner benefit?





Farmer characteristics
+influence on environmental
and social stewardship

- Positive environmental attitude
- Knowledge of nonpoint source programs or practices
- Seeks and uses information
- Higher education level
- Views self primarily as farmer



Sorice, M.G., U.P. Kreuter, B.P. Wilcox and W.E. Fox III. **Changing landowners, changing ecosystem? Land-ownership motivations as drivers of land management practices**

- Three groups of landowners
 - Agricultural production – profit motivated
 - Multiple objective – production oriented + lifestyle, investment, wildlife
 - Lifestyle-oriented
- Research “suggests that although lifestyle-oriented landowners tend to express more interest in conservation-based environmental management, they may not have the knowledge or skills to manage their land accordingly.”



Farm characteristics +influence on environmental and social stewardship

- Larger farms (more acres or head of livestock)
- More than one crop rotation (not just corn and beans)
- Higher levels of vulnerable land
- Located near a waterbody

Economic factors +influence on environmental and social stewardship



Higher income – farm and off-farm



Uses marketing arrangements – e.g. forward contracts



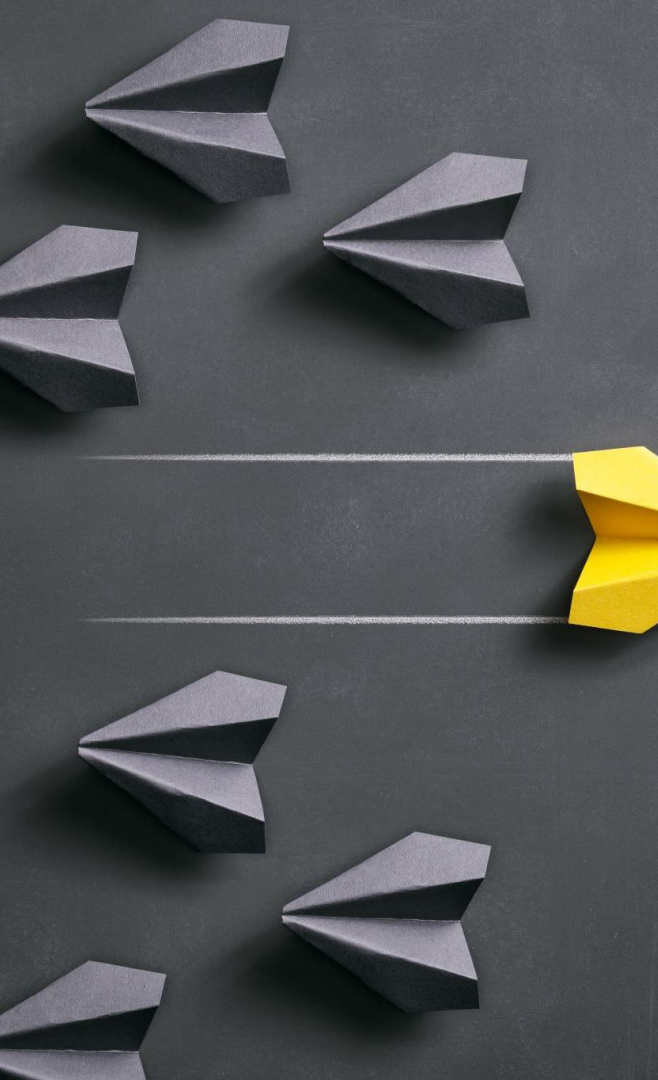
Positive yield impact expected



Program/Practice

(most common category with positive influence)

- Farmer attitude positive?
- Behaviors closely related to conservation practices?
- Knowledge of nonpoint source programs, efforts or practices?

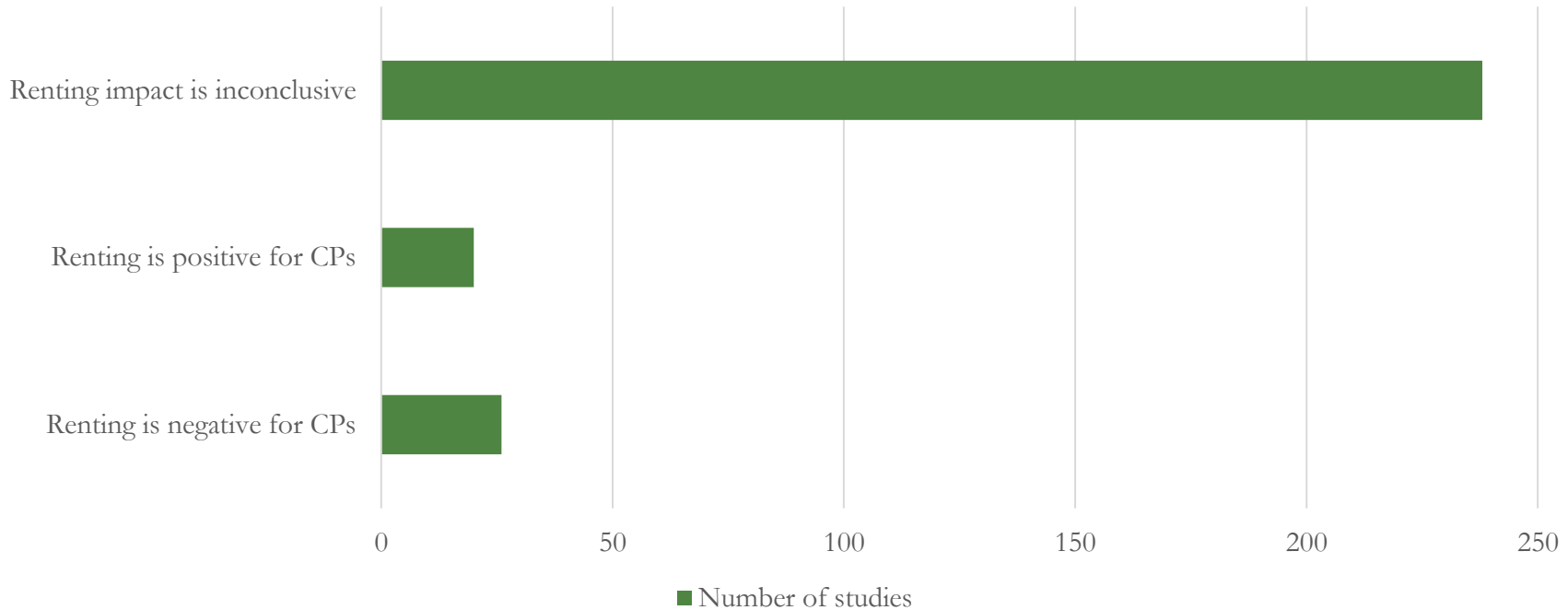


Leasing on conservation practice adoption

“Some variables often thought to be important, such as land tenure, did not emerge as consistently important in this cross-study review.”

Inconclusive results suggest “that a more precise measure of land tenure—e.g., one that captures whether a practice is adopted on owned or rented land, or a farmers’ perceived stability and/or anticipated longevity of a lease arrangement, rather than simply whether the land is rented or not—may be needed to more effectively understand how ownership or tenancy may influence levels of adoption.”

Quantitative Research: Leasing on conservation practice adoption

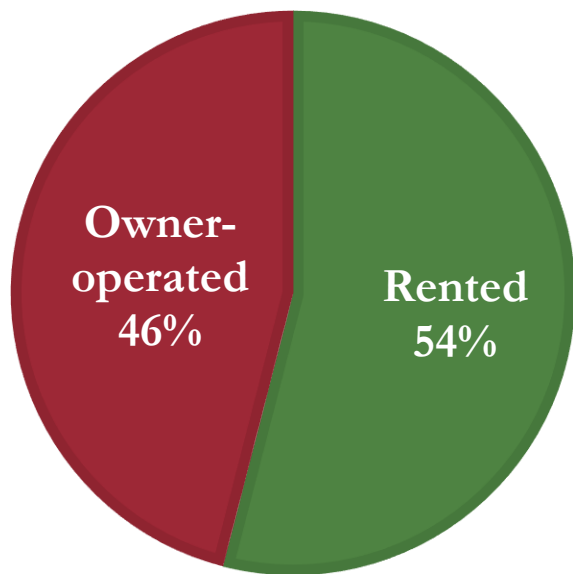


**Qualitative
Research (10
studies):
Leasing on
conservation
practice adoption**

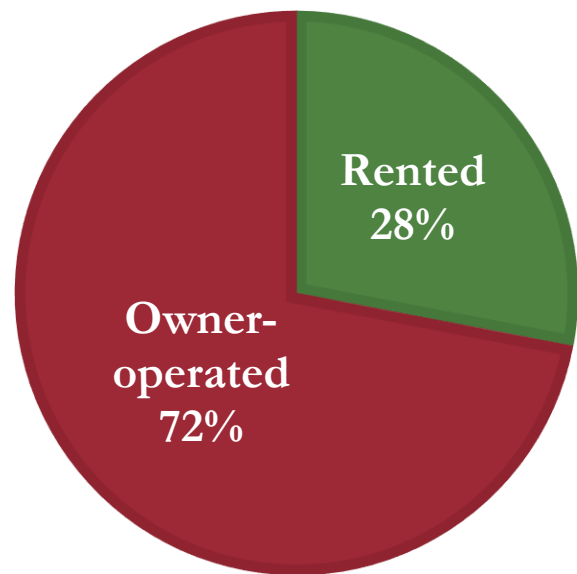
- Tenants expressed not adopting conservation practices because of
 - Fear of losing access to rented land
 - High cash rental rates
 - Perception of tenure security and landowner support

Acres rented in U.S.

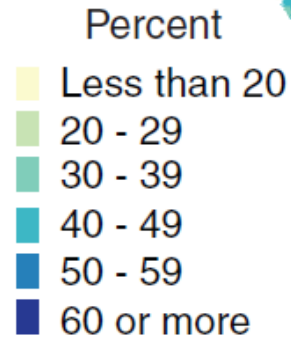
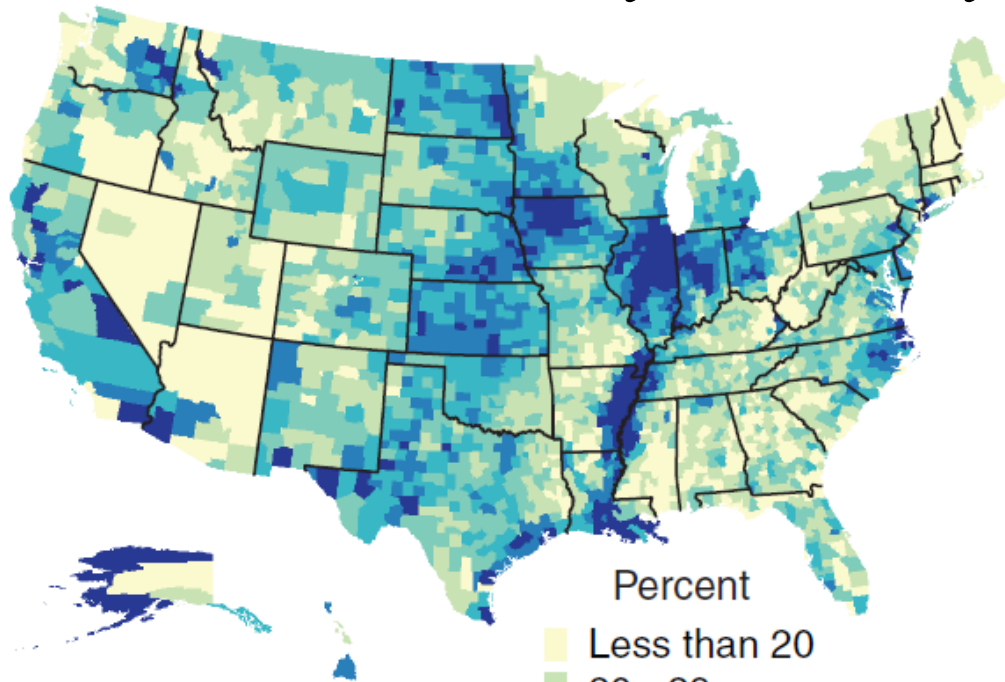
Cropland



Pastureland



Rented land by county



Barriers to conservation adoption

Lease terms

Information deficits

Information asymmetries

Interpersonal or cognitive barriers



Barriers to adoption: lease terms



LEASE
LENGTH



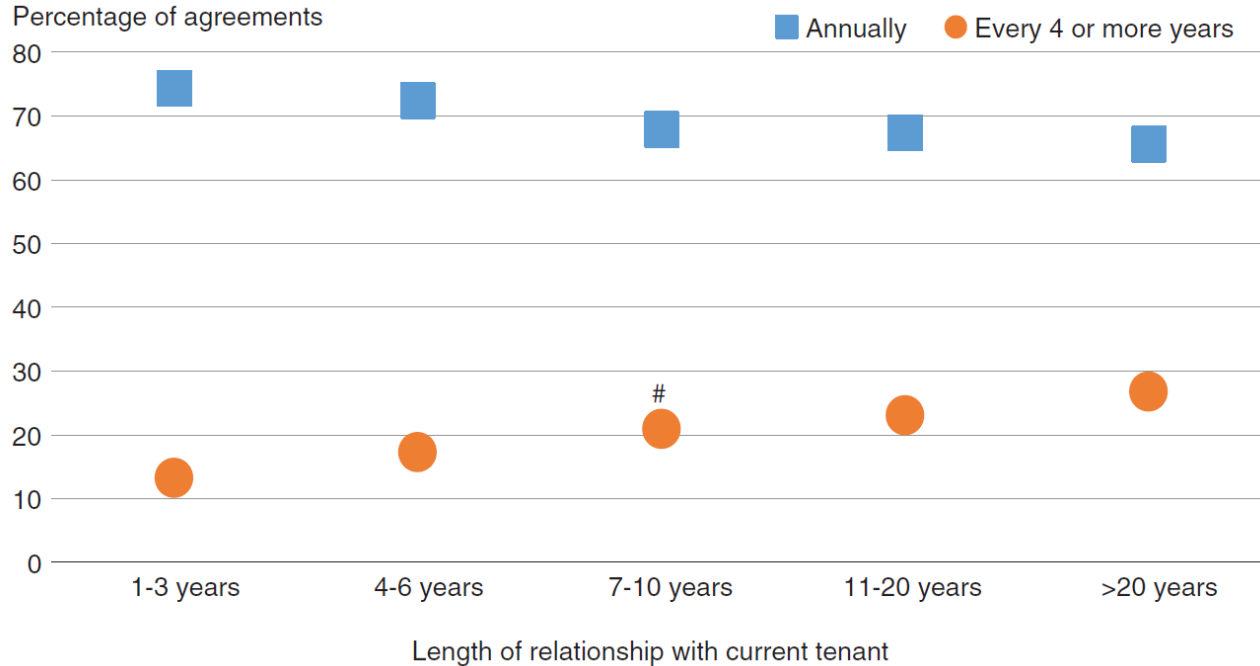
LEASE TYPE



RENTAL RATE

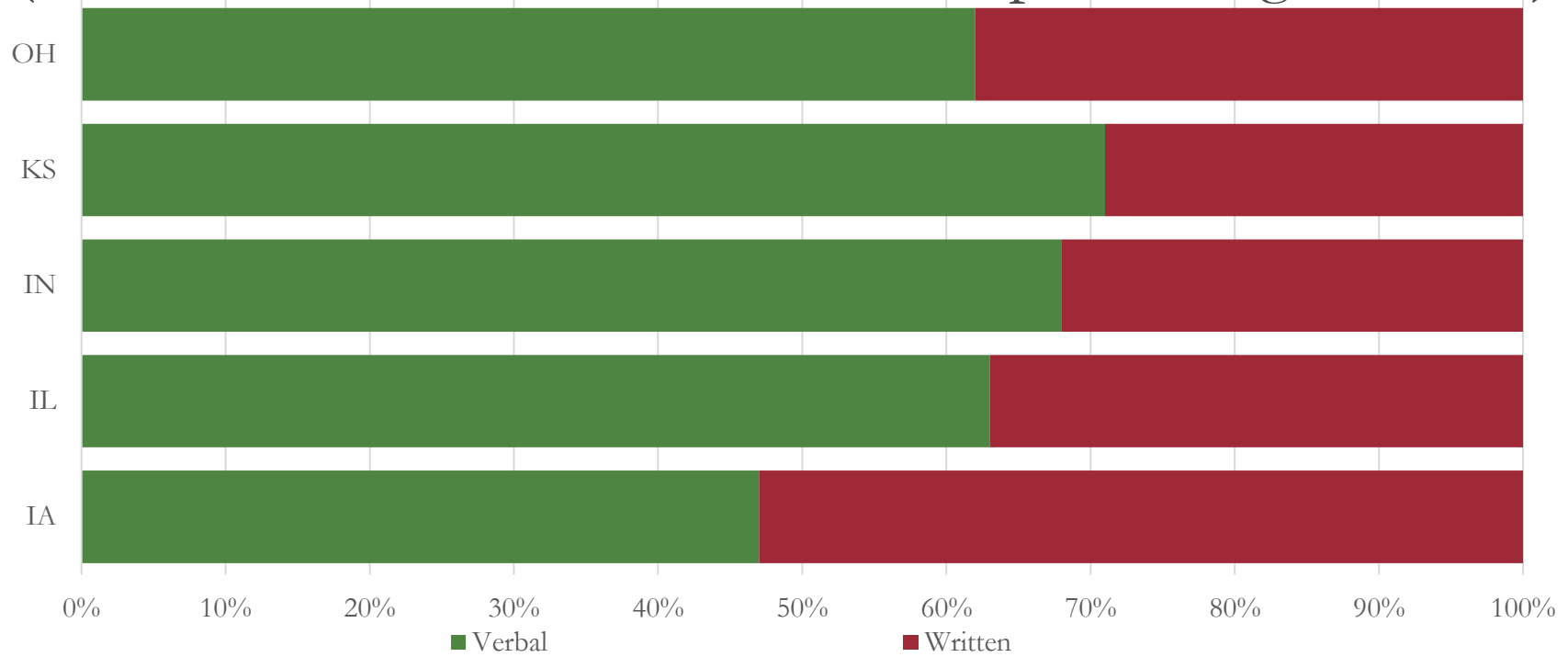
Longer leases assist
in conservation
adoption

- 73% renew annually
- 15% renew every 4 years or more



Lease types: written or verbal

(written leases establish conservation practice agreements)



The background of the slide features a stack of US dollar bills, including a \$100 bill and a \$20 bill, fanned out and slightly blurred. The bills are oriented vertically, with the \$100 bill at the top and the \$20 bill at the bottom. The text is overlaid on the right side of the image.

Lease payment: rent

- Rental rate may limit the ability of tenant to adopt conservation practice. Tenant focused on meeting cash flow.
- About 20% of landowners expressed willingness to pay some of the costs of cover crop adoption by their tenants (Zhang 2019).

Barriers to adoption: information deficit



REASONABLE
PRACTICES

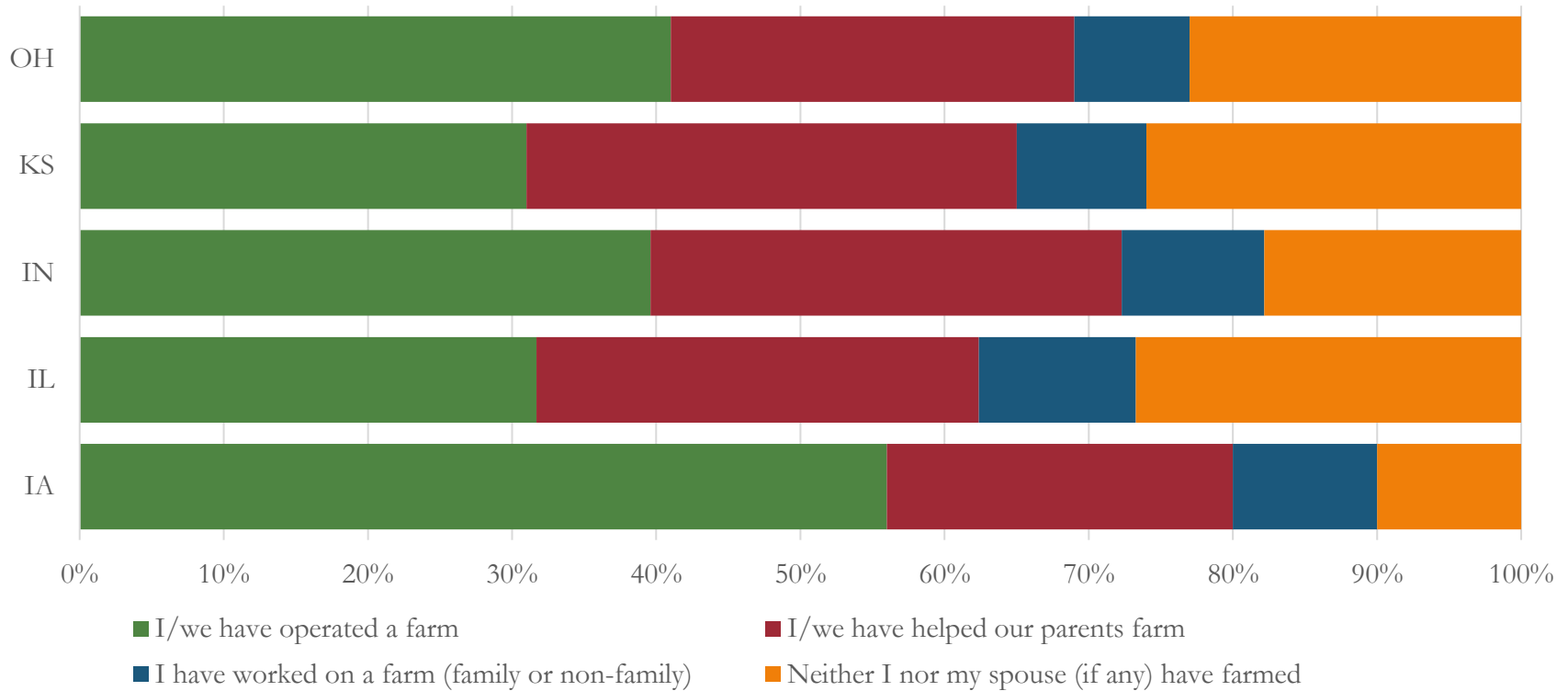


RESOURCES
AVAILABLE



TRUST IN SOURCES
OF INFORMATION


Experience with farm (not necessarily with farming)



Which of
these are
relevant to
my land?

A word cloud of agricultural conservation practices. The words are arranged in a roughly circular pattern, with some larger and more prominent than others. The colors of the words vary, including shades of green, red, orange, and teal. The practices listed include:

- Settlement Basins
- Terracing
- Brush Management
- Prescribed Grazing
- Cover Crops
- Streams Forest Buffers
- Minimum Soil Disturbance
- No-till
- IPM
- Grassed Waterways
- Prescribed Burning
- Conservation Tillage
- Nutrient Management
- Convert Cropland to Pastureland
- Gully Plugs
- Split Nitrogen Application
- Ponds
- Silvopasture
- Streamside Fencing
- Pollinator Plants
- Species Diversification
- Contour Farming
- Filter Strips
- Rotational Grazing
- Crop Rotation
- Permanent Soil Cover



Trust in
information

- Does advisor have the latest technical knowledge?
- Do landowner and tenant agree on information source?
- Long term decisions require more trust
- Politicization of science

Barriers to adoption: information asymmetry



TENANT
CONTROLLED FARM
INFORMATION



TENANT FAMILIARITY
WITH LOCAL
CONDITIONS



LANDOWNER PLANS
FOR THE LAND

Division of decision making

Division of decisionmaking

	Non-operator landlords			
	Tenant	Landlord	Together	Separate
Fertilizers and chemicals	92.8	1.8	5.1	0.3*
Cultivation practices	90.9	1.5	7.4	0.1*
Crop livestock choice	93.3	1.2	5.4	0.2*
Harvesting	95.2	1.3	3.4*	0.1*
Marketing	86.6	2.5	5.8	5.1
Crop Insurance	83	3.2	8	5.7
Permanent conservation	63.5	10.5	25.2	0.8
One-season conservation	82	4.6	13	0.4*
Government program	69.9	7	20.5	2.6



Landowner types and decision making

Division of decisionmaking

	Non-operator landlords			
	Tenant	Landlord	Together	Separate
Permanent conservation	63.5	10.5	25.2	0.8
One-season conservation	82	4.6	13	0.4*

	Operator landlords			
	Tenant	Landlord	Together	Separate
Permanent conservation	43.3	28.1	27.4	1.2*
One-season conservation	66.6	14.9*	18.2	0.2*

Transaction (non-cash) costs

- Accepting transaction costs (time, information gathering, contract negotiations) is required to adopt conservation.
 - Any way to reduce these transaction costs would enhance conservation adoption.
 - “For many [farmers], the transaction costs induced by the nonprice attributes are a more important driver of contract [willingness to accept] than the cost of adopting the environmental practice.”
- The party wanting to adopt conservation practices needs to minimize the transaction costs to the other party
 - Gather information to share with the other
 - Propose a plan to start the conversation – nudges are imbedded in proposals
 - Government policy? Information and education included in the policy?



Barriers to adoption: interpersonal and cognitive barriers



GEOGRAPHIC
DISTANCE



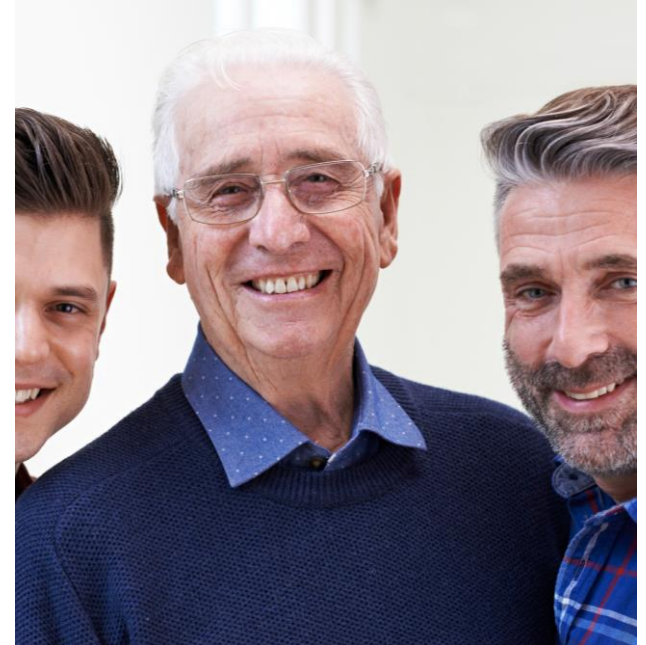
GENDER



AGE

Rent and age correlation?

- Are aging landowners dependent on rental income?
- Absentee landowners more likely to own land for amenity reasons?
- Heirs less dependent on rental income?
- Heirs have different environmental/conservation ideas?





Barriers to conservation practice adoption

“Some variables often thought to be important ... did not emerge as consistently important in this cross-study review.”