



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Do Messages Matter in Conservation Practice Adoptions?

Evidence from a Farmer Information Treatment

Xiaolan Wan, Department of Economics, Iowa State University

xiaolan@iastate.edu

Hao Sun, Department of Statistics, Iowa State University

hao123@iastate.edu

Jacqueline Comito, Department of Agricultural and Biosystems Engineering, Iowa State University,

comito@iastate.edu

Wendong Zhang, Dyson School of Applied Economics and Management, Cornell University,

wendongz@cornell.edu

*Selected Poster prepared for presentation at the 2023 Agricultural & Applied Economics Association
Annual Meeting, Washington DC: July 23- 25, 2023*

*Copyright 2023 by Xiaolan Wan, Hao Sun, Jacqueline Comito, and Wendong Zhang. All rights reserved.
Readers may make verbatim copies of this document for non-commercial purposes by any means,
provided that this copyright notice appears on all such copies.*



Do Messages Matter in Conservation Practice Adoptions? Evidence from a Farmer Information Treatment



Xiaolan Wan¹, Hao Sun¹, Jacqueline Comito¹, Wendong Zhang²

¹Iowa State University ²Cornell University

Background

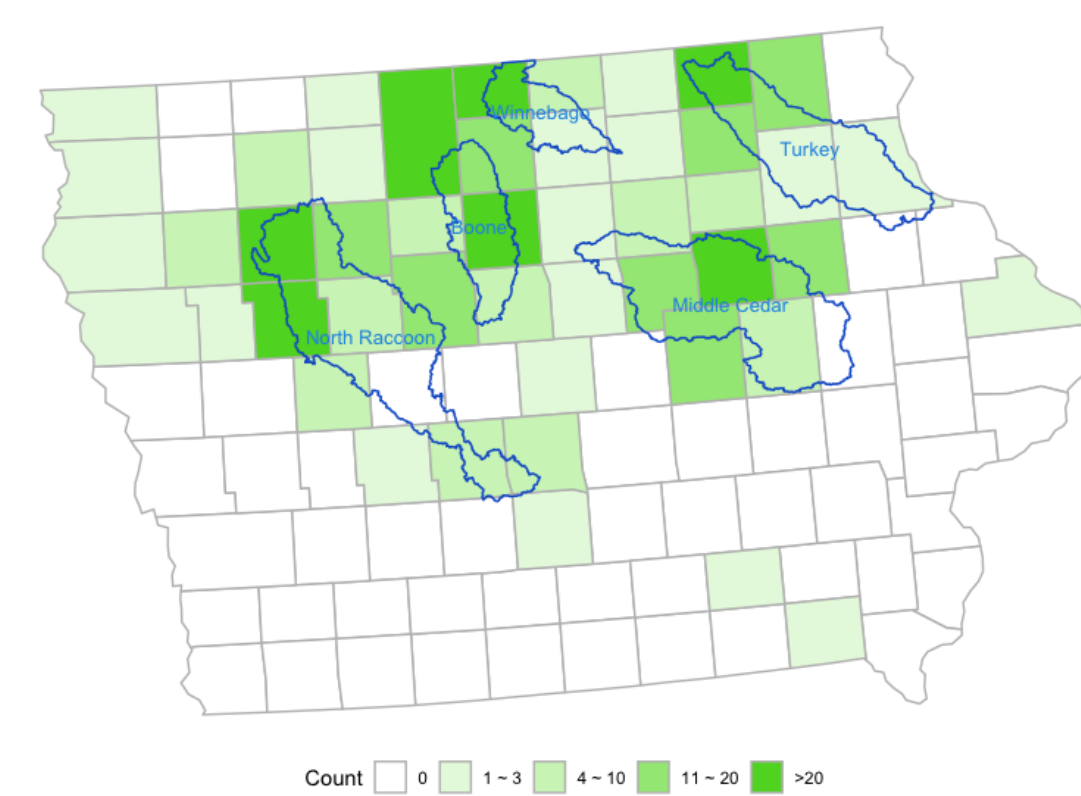
- ▶ The Midwestern landscape is facing significant water quality problems attributable to nutrient pollution from annual row crop agriculture.
- ▶ Key edge-of-field practices have been remarkably underutilized even though they can effectively reduce nutrient delivery.
- ▶ **Saturated buffers** divert existing tile drainage outflow through the subsurface of a perennial vegetative riparian buffer before it enters the waterway.

Objectives

- ▶ To promote knowledge uptake on edge-of-field practices, facilitating farmers and landowners to adopt saturated buffers;
- ▶ To investigate whether and how information treatments influence farmers' take-up decisions on saturated buffers;
- ▶ To identify the most effective education strategy to accelerate future adoption.

Information Treatment Experiments

- ▶ Conducted an online survey to 4,360 samples of landowners and farmers from 5 different HUC 8 watersheds in Iowa.
- ▶ Received 726 surveys out of 4,228 eligible farmers, resulting in a response rate of 17.2%.
- ▶ Information treatment experiments: presented respondents with information highlighting the environmental benefits of saturated buffers.
- ▶ Three treatments: a two-page fact sheet, a video narrative talked by an extension professional, and a video narrative talked by an early adopter.



Groups	Treatments	Information Treatments Details
Group 1	A fact sheet	We presented recipients with an online two-page fact sheet on environmental benefits for saturated buffers before contingent valuation questions.
Group 2	A video by an ISU extension professional	We presented recipients with a 2-min educational video by an ISU extension professional.
Group 3	A video by an early farmer adopter	We presented recipients with a 2-min educational video by an early farmer adopter.
Group 4	Control group	We presented recipients only the survey questionnaire.

Econometric Model

Assume that farmer i is offered a contract j and derives utility U_{ij} and U_{i0} from accepting an edge-of-field contract j and rejecting the contract, respectively. The utility, U_{ij} , that farmer i derives from program j can be written as $U_{ij} = V_{ij} + \epsilon_{ij}$. The probability that a farmer will choose to participate in a hypothetical program is:

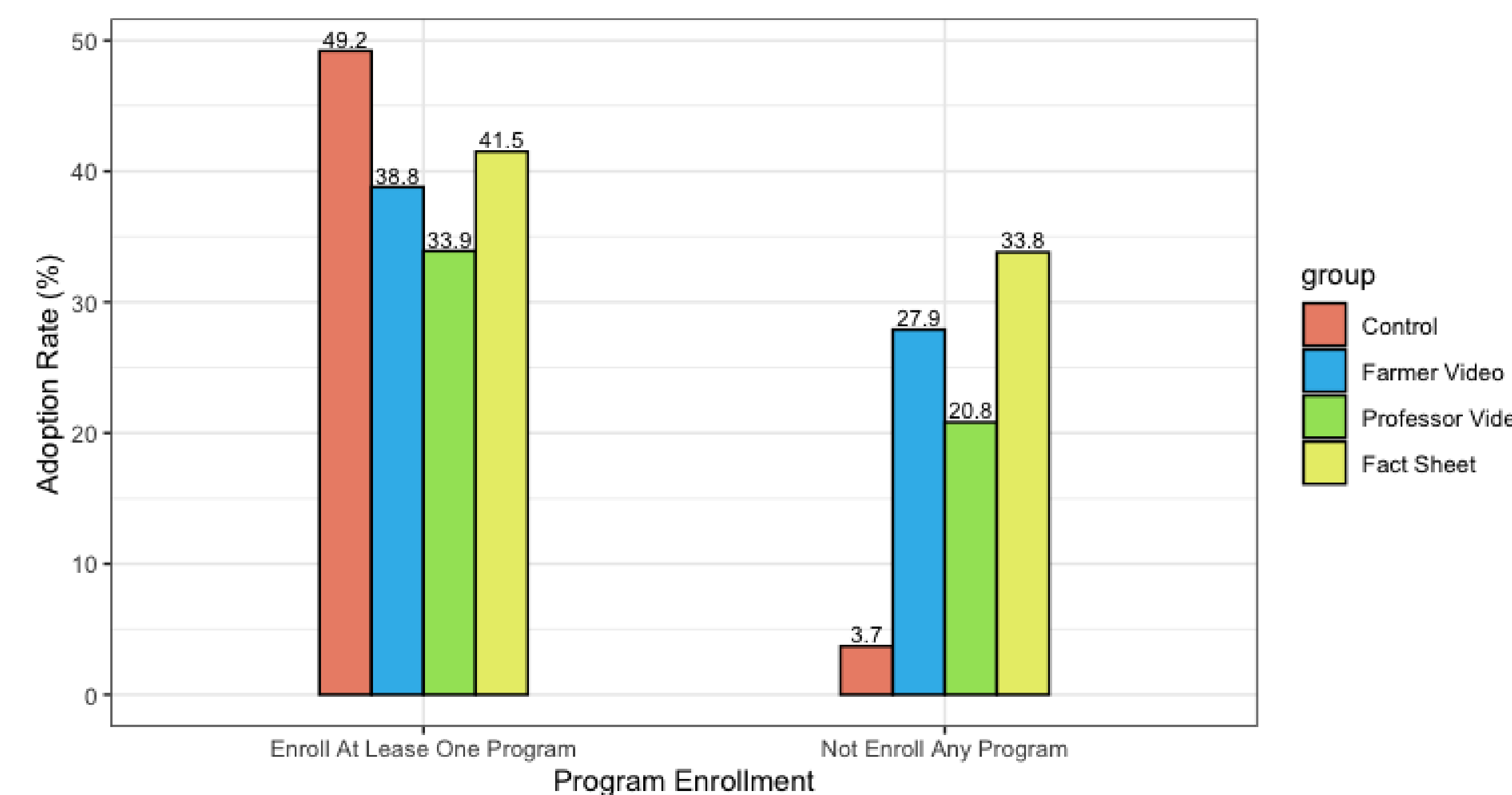
$$P_{ij} = e^{V_{ij}} / (1 + e^{V_{ij}}),$$

The indirect utility of farmer i , if he were to accept contract j , is given by the following equation:

$$V_{ij} = \beta_1 \text{Factsheet}_i + \beta_2 \text{Famer}_i + \beta_3 \text{Extension}_i + \alpha X_i + \delta Z_{ij} + \mu_k$$

where

- ▶ X_i is a vector of individual-specific characteristics, including scores measuring perceived environmental benefits and barriers, and a dummy variable whether any neighbor adopted saturated buffer;
- ▶ Z_{ij} denotes program attributes in the contract j received by farmer i , including the cost-share payment and a dummy for whether a bonus is offered in a contract;
- ▶ μ_k denotes a fixed spatial effect.



Results

Demographics	Group N		Group E		p-value
	Mean	Std.Dev.	Mean	Std.Dev.	
Age	65.94	12.77	64.78	12.43	0.29
Male	0.83	0.38	0.82	0.38	0.90
Income > \$250,000 ¹	0.27	0.44	0.37	0.48	0.01
College ²	0.47	0.50	0.47	0.50	0.91
Farming years	34.26	15.82	34.77	15.54	0.74
EnvScore	13.00	3.21	13.50	3.26	0.06
BarrierScore	12.32	3.15	12.12	3.21	0.42

Table: Regression Results and Subgroup Analysis

	Dependent variable		
	Whether accept a program?		
	Full Group	Group N	Group E
	(1)	(2)	(3)
Factsheet	0.191 (0.282)	2.682** (1.068)	-0.262 (0.339)
Farmer	-0.075 (0.290)	2.538** (1.078)	-0.540 (0.352)
Extension	-0.401 (0.290)	2.146** (1.076)	-0.847** (0.355)
Payment	1.113** (0.565)	-0.262 (1.022)	1.672** (0.708)
Overpay	-0.470* (0.283)	-0.545 (0.543)	-0.378 (0.349)
Neighbor	-0.088 (0.222)	0.134 (0.416)	-0.187 (0.277)
EnvScore	0.166*** (0.034)	0.123* (0.066)	0.191*** (0.043)
BarrierScore	-0.062* (0.032)	-0.078 (0.064)	-0.052 (0.039)
Spatial fixed effect	Yes	Yes	Yes
Observations	627	225	402
Log Likelihood	-372.493	-111.787	-240.829

Note: *p<0.1; **p<0.05; ***p<0.01

Conclusions

- ▶ Information treatments are effective for farmers with little conservation experience (Group N).
- ▶ The fact sheet is the most effective treatment, followed by the farmer video, then the professional video.
- ▶ Farmers with conservation experience (Group E) are more sensitive to cost-share payment. With higher payment, the adoption rate is higher.