



April 2009
Volume 47 Number 2
Article Number 2RIB6

[Return to Current Issue](#)

Conservation Tillage: Repackaging the Message for Farmers

Alan Sundermeier
Extension Educator
Ohio State University - Wood County
Bowling Green, Ohio
sunderrmeier.5@cfaes.osu.edu

L. Fleming Fallon, Jr.
Professor of Public Health
Bowling Green State University
Bowling Green, Ohio
ffallon@bgsu.edu

Hans D. Schmalzried
Associate Professor of Public Health
Bowling Green State University
Bowling Green Ohio
hschmal@bgsu.edu

Luke Sundermeier
Ohio State University - Wood County
Bowling Green, Ohio
Research Assistant

Abstract: Improved agricultural conservation practices can benefit both the environment and farmers. A sample of farmers in the Western Lake Erie Basin Watershed were asked about conservation tillage, including where they learned about practices they use and why they adopted them. The study reported here found that farmers more commonly consult other farmers, magazines or newspapers, and family members to obtain information about tillage practices than they use Extension agents. Farmers said they practiced conservation tillage mainly because it saves time and fuel. Extension agents can increase their effectiveness by recognizing economics and using the popular press when delivering their findings.

Introduction

A good watershed management program includes farmers practicing conservation tillage methods (US EPA, 2007). Farmers need training and education on conservation practices to understand how to preserve and improve soil as well as to protect and enhance water quality. When farmers are educated about conservation tillage practices and their positive effects on soil and water quality, they are motivated to implement recommended methods (Coffey, Jennings, & Humenik, 1998). When asked about factors required before

fully switching to better conservation methods, farmers cited needing more time, information and management skills to be successful (Drost, Long, Wilson, Miller, & Campbell, 1996).

Where farmers learn about conservation tillage and why they decide to adopt these practices are not well understood. Receiving inconsistent or conflicting information can negatively influence a farmer's decision to adopt conservation tillage practices. Information that is perceived as taking too long to obtain or that is too difficult or complex to understand are reasons given by some farmers as hampering their ability to adopt conservation tillage practices (Nowak, 1992). Researchers need to listen to farmers and provide materials relevant to their needs (Drost, Long, & Hales, 1998).

While soil conservation is often thought of as the primary reason for farmers adopting conservation tillage practices, many farmers actually do not believe that water pollution is a major problem or that farming activities contribute heavily to pollution (Hau, Zulauf, & Sohngen, 2004). Costs for new equipment and financial risks associated with making changes are also considered barriers for many farmers adopting conservation tillage practices (Al-Kaisi, Hanna, & Tidman, 2000). For example, some farmers believe that adopting conservation practices would be a financial risk and doubted that transitioning would be beneficial or practical (Drost et al., 1996).

Education and training are the key components of programs aimed at persuading farmers to adopt conservation tillage practices. Extension agents should be in the front line when educating farmers about implementing conservation tillage along with promoting the benefits of such practices (Drost et al., 1996). However, it is not known if agents are the primary sources of this information. Education, independent of the source of the information, is important. Therefore, the study reported here was designed to examine the sources of information about conservation tillage and farmer rationale for adopting conservation tillage methods.

Data and Methodology

Confidential questionnaires were distributed at two training events sponsored by Ohio State University Extension. Farmers attending these events resided in the Western Lake Erie Basin Watershed. The Western Lake Erie Basin Watershed includes all or part of 19 counties in Northwest Ohio. The first event was a Conservation Tillage & Technology Conference attended by 284 farmers. Two hundred and four farmers completed and returned the questionnaire, for a response rate of 71.8%. The second event was an annual Winter Farm Fair where attendees could receive private pesticide recertification credits. One hundred and twelve farmers attended. A total of 81 farmers completed and returned the questionnaire, for a response rate of 72.3%. Combining the two events netted 285 questionnaires, for a response rate of 72.0%.

Instrument

Questions used in the survey were taken from an earlier study conducted by Napier, Thraen, Gore, and Goe (1984). The reliability of the final questionnaire was evaluated by a team of experts (specialists and agents with experience in conservation management and agricultural education).

The questionnaire asked farmers where they learned about the types of tillage practice they use and why they adopted them. Participants responded by selecting from a list of possibilities that included write-in options. Demographic information included year born, highest level of education completed, number of years spent in farming, percentage of income derived from agriculture, number of acres farmed (owned versus rented), and percentage of agriculture income derived from crops and livestock. Responses were coded and entered into a database for analysis.

Statistics

Frequencies and cross-tabulations were conducted on coded data. The number of farmers who responded to a particular question was used to calculate percentages. Chi-square (χ^2) tests of independence were conducted to examine the association between categorical dependent variables and demographic variables.

Results

The four most common sources of information for farmers about conservation tillage were: other farmers (173; 60.7%), magazine or newspaper (123; 43.2%), family member (91; 31.9%), and Extension office (87; 30.5%), indicating that fewer than one-third of the respondents used Extension agents to learn about tillage methods. A complete listing of all responses and their frequencies is found in Table 1.

Table 1.

Survey Question: Where Did You Learn About the Type of Tillage You Use? (Check all that apply)

Rank	Response	Number	Percentage*
1	Other Farmers	173	60.7
2	Magazine or Newspaper	123	43.2
3	Family Member	91	31.9
4	Extension Office	87	30.5
5	Equipment Dealers	66	23.2
6	Government Staff	58	20.4
7	Private Consultants	37	13.0
8	School	31	10.9
9	Internet	25	8.8
10	Custom Operators	24	8.4
11	Promotion Literature	22	7.7
12	Radio/TV	9	3.2
* % Calculated using Number in the numerator and 285 in the denominator. Total percentages > 100 due to multiple responses.			

The three most common responses for the reasons farmers adopting tillage practice(s) they use were: save time and fuel (213; 74.7%), lower production costs (212; 74.4%), and reduce soil erosion (193; 67.4%). A complete listing of all responses and their frequencies is found in Table 2.

Table 2.

Survey Question: Why Have You Adopted the Tillage Practice That You Use?

Rank	Response	Number	Percentage*
1	Save Time and Fuel	213	74.7
2	Lower Production Costs	212	74.4
3	Reduce Soil Erosion	192	67.4
4	Increased Yields	133	46.7
5	Other Farmer Success	76	26.7
6	Required By Government Policy	28	9.8
* % Calculated using Number in the numerator and 285 in the denominator. Total percentages > 100 due to multiple responses.			

Discussion

In our experience, farmers more commonly consult other farmers, magazines or newspapers, and family members to obtain information about tillage practices. They are twice as likely to use these sources than Extension agents. Overall, relying on other farmers for information is simple and they are easy to understand. Other farmers are readily available and are likely to provide reliable but not scientifically based information. In fact, none of the top three methods ranked by farmers (i.e., (1) other farmers, (2) magazine or newspaper, and (3) family member) is scientifically grounded sources of information.

While Extension agents were ranked highest among sources of technical information (i.e., higher than equipment dealers, government staff, private consultants, school, and custom operators), they were ranked as the number four source of information for farmers in this study. Extension agents are generally accessible in most counties. We are aware that Extension agents are not always available in all counties of all states. Further, the format of their information may not be readily or easily understood by farmers, possibly due to differences in education.

It appears that one of the challenges for Extension agents is to learn how to translate scientific information into simpler more understandable language that makes sense to farmers whose average education level was reported as having some post high school training. New strategies may need to be developed before the relative ranking of Extension agents increases.

Economic gains appear to be an important reason for adopting conservation tillage practices. Farmers reported that they are using conservation tillage practices primarily because they want to save time and fuel. This is equivalent to lowering production costs. According to the data from the study reported here, Extension agents should consider being more sensitive to economic issues when preparing their messages. Because economic issues are important to survival and short-term success in farming, including economic factors is likely to improve how articles are perceived and ultimately accepted by farmers. Linking both messages (conservation and economics) is synergistic for all parties.

Conveying accurate information to farmers about conservation tillage practices is important. Improper or poor conservation farming practices can affect heavily on non-point source agricultural pollution, considered by the U.S. Environmental Protection Agency to be the leading source of water degradation in the United States (US EPA, 2007). Poor farming practices accelerate soil depletion and loss (US EPA, 2007). Some farmers have adopted conservation tillage practices, but additional education and training may be needed to

more fully inform them of longer term reasons (related to soil conservation) for adopting different tillage practices. Despite the importance of conservation, economic success is a more immediate concern for farmers.

The survey results indicate that farmers are obtaining much of their information about conservation tillage practices from popular magazines and newspapers. In addition to their articles in professional journals, Extension agents should consider writing for the popular press. Their effectiveness in delivering the information as it is currently packaged could be limiting its reception by members of the intended audience.

In summary, economic survival and success are important issues for farmers. Conservation tillage practices that promote soil and water quality are important issues for Extension agents. Linking these should benefit both groups. Citing economic benefits should enhance the attractiveness of the total message for farmers.

Extension agents should consider writing more articles for the popular press. As academicians, we know that conservation tillage involves more than profits. Extension agents should consider trying to educate farmers about the wider implications of conservation tillage.

References

- Al-Kaisi, M., Hanna, M., & Tidman, M. (2000). Survey: Iowa no-till holds steady. *Integrated Crop Management* [On-line]. Retrieved July 1, 2007 from: <http://www.ipm.iastate.edu/ipm/icm/2000/10-23-2000/notillsteady.html>
- Coffey, S., Jennings, G., & Humenik, F. (1998). Collection of information about farm management practices. *Journal of Extension* [On-line], 36(2) Article 2FEA4. Available at: <http://www.joe.org/joe/1998april/a4.php>
- Drost, D., Long, G., Wilson, D., Miller, B., & Campbell, W. (1996). Barriers to adopting sustainable agricultural practices. *Journal of Extension* [On-line], 34(6) Article 6FEA1. Available at: <http://www.joe.org/joe/1996december/a1.php>
- Drost, D., Long, G., & Hales, K. (1998). Targeting extension efforts for the adoption of sustainable farming practices. *Journal of Extension* [On-line], 36(5) Article 5RIB1. Available at: <http://www.joe.org/joe/1998october/rb1.php>
- Hua, W., Zulauf, C. & Sohngen, B. (2004). *Ohio farmers' conservation decisions: 2004 survey results*. The Ohio State University Department of Agricultural, Environmental, and Development Economics.
- Napier, T. L., Thraen, C. S., Gore, A., & Goe, W. R. (1984). Factors affecting adoption of conventional and conservation tillage practices in Ohio. *Journal of Soil and Water Conservation*, 39(3): 205-209.
- Nowak, P. (1992). Why farmers adopt production technology. *Journal of Soil and Water Conservation*, 47(1): 14-16.
- US EPA (2007). Agriculture management practices for water quality protection module. Retrieved July 10, 2007, from: <http://www.epa.gov/watertrain/agmodule/>

Copyright © by *Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the *Journal Editorial*

Office, joe-ed@joe.org.

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#).