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Abstract

Since water quality has become a national priority for research and extension, little has been known regarding farmers' use of information sources.

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Useful Water Quality Information Sources: The Farmers' Point Of View

Thomas H. Bruening

Since water quality has become a national priority for research and extension, little has been known regarding farmers' use of information sources. The focus of this study was to get farmers to indicate their communication needs regarding this topic through the focus group technique.

The findings indicate that education dealing with water quality should be delivered to farmers with their active involvement. Farmers prefer to read about activities prior to attending meetings and events. Effective communication strategies need to be developed to bring farmers around to an environmental perspective. Farmers trust Soil Conservation Service, adult educators and other farmers regarding water quality while they question the motives of fertilizer dealers.

Introduction

In 1989, problems associated with water quality became a Presidential Initiative. More recently, water quality has been ranked as the number one priority for agriculture as identified by The Joint Council on Food and Agricultural Sciences for research, extension, and higher education for fiscal year 1992 (USDA, 1991). Also the National Extension Committee for fiscal year 1993 identified water quality as the first priority. Clearly, water quality has become a national priority for research and extension. Also evident in literature reviews is farmers' lack of input into any water quality discussions.

While little is known about farmers' perceptions of water quality as an issue, possibly even less is known about farmers' use of information sources regarding this agricultural problem. What sources of information do farmers use? Who do farmers turn to if they need information about water quality? What strategies, methods and approaches should be used to help farmers deal with this problem?

In an era of heightened environmental awareness, local governments and the public have become actively involved in setting policy (Meij & Abdalla, 1990). The public's desire for safe food, water, and a

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healthy environment indicated that charging liability for contamination will become more prevalent (Centner, 1990; Feitshans, 1990). Since these issues are becoming more prevalent, it is increasingly important that farmers receive timely information to combat environmental problems. According to Contant (1990), information regarding groundwater contamination from agricultural sources must be disseminated through different channels. Napier and Camboni (1988) contended that the motivation to help farmers adapt to new technologies and practices will involve the use of combined information diffusion systems. These systems will utilize such mediums as farm magazines, local newspaper articles and government agencies working in concert to provide the needed information. This information provided to farmers will be critical because it is intended to provide a basis for farmers to permanently change or alter some of their practices.

Existing literature indicated that modification and alteration of existing farming practices do not come easily (Lionberger & Gwin, 1982). Change agents will have a difficult time motivating farmers who are sympathetic to environmental issues because these same farmers are reluctant to adopt any new farming technology. These findings by Napier, Camboni and Thraen (1986) suggested that informational programs will be inconsequential in farmers' decisions about adopting new conservation practices.

Some researchers have started to identify the methods and strategies farmers find useful when confronted with environmental problems. In Pennsylvania, farmers indicated on-farm consultations and demonstration tours were useful sources of information regarding

environmental issues (Rollins, Bruening, & Radhakrishna, 1992). Okal (1986) found that the three top-ranked sources for environmental related information were (1) extension education assistants, (2) extension publications, and (3) friends and neighbors. Contant (1990) found that farmers believed extension agents were a reliable source of information, but farmers still rely on their own experiences more than any other source of information. Bruening (1989) identified field demonstrations and local meetings as the farmers' preferred sources of information.

Richardson (1989) found respected farmers as a top source of reliable information, and producers preferred the traditional information delivery methods, including newsletters, meetings, farm visits, telephone calls, and on-farm tests. When asked to project their delivery method preferences five years in the future, farmers showed no significant differences from current informational sources. Kramic (1987), in determining the influence of information sources on decision making by farmers, found that farmers rely on TV and radio as primary sources of market information. Agricultural Stabilization and Conservation Service (ASCS) programs and extension programs were still perceived as the most important and accurate means of disseminating information.

Research reviewed to this point does not provide for open-ended input from the farmers surveyed. The use of open discussion with participants often elicits a more accurate and complete understanding of their position on an issue (Krueger, 1988; Morgan, 1988). According to Guba and Lincoln (1989) freedom from the contamination of bias or values comes from intersubjective agreement or the utilization of methodol-

ogy that renders the study impervious to human bias or distortion. Focus groups are an attempt to secure information which attempts to secure intersubjective agreement based on the opinions of the clientele. Krueger (1984) noted that historically we tend to develop educational programs based on past experience, theory, and tradition, and these methods can waste time and resources. The use of focus groups allows better planning and participation in educational programs. While generalizability is not a purpose of an ethnographic study, it is used to describe a particular sociological phenomenon found in the setting.

Purpose of the Study

The purpose of this study was to identify sources of information which farmers rely on for dealing with water quality problems. The study had the following objectives:

1. Identify human, organizational, and written sources of information farmers used to solve water quality problems.
2. Identify information methods which will elicit farmer participation in water quality educational activities.

Methodology

Seven questions, adapted from Bruening (1989) and Contant (1990), were designed to evoke responses from farmers regarding sources of information for solving environmental problems. The validity of the questions was established by a review of four faculty in the Department of Agricultural and Extension Education at Penn State University. A pilot study, consisting of graduate students, provided face validity. Synchronic reliability was established in this study. This type of reliability rarely involves identical

observations, but rather observations that are consistent with respect to the particular features of interest to the observer (Kirk & Miller, 1986).

The focus groups were conducted according to guidelines established by Krueger (1988). One moderator conducted three focus group interviews using identical questions. Each focus group ranged from nine to twelve individuals. A total of 31 farmers participated in the three focus group discussions. Participants were selected by agricultural educators and extension professionals from the geographical locations where the focus groups were conducted. Each focus group interview was limited to 90 minutes.

Findings of the Study

Each focus group discussion was recorded on a cassette recorder and later transcribed. A post observation analysis was performed by the research team consisting of a moderator and an assistant moderator. The team identified congruent statements and highlighted contrasting comments which were organized into categories by question using the "bins" approach suggested by Miles and Huberman (1984).

Sources of Information

Farmers' responses regarding sources of information related to three primary categories: public or private education agencies and individuals. Farmers indicated they would use several governmental sources of information. Cooperative extension was a frequent public service agency mentioned by each group. Others included agricultural education teachers of young and adult farmers, Soil Conservation Service (SCS), and Agricultural Stabilization and Conservation Service (ASCS) personnel. Department of Environmental Resources (DER) was perceived by some

to be a threat, while others used this agency when they really wanted a problem solved right away. Private sources of information such as magazines and consulting firms were a major source of information used by farmers to solve a particular water quality problem. Only a few farmers did not perceive water quality to be a problem they must deal with in their farming operation. Individuals in each group noted they would rely on their own experiences to try to solve environmental problems. Representative comments included:

"I would go to the extension agents or to our agriculture education teacher or I would look at it myself."

"Either contact county extension to find out what I should do or find out from Penn State what I should do to change or solve the problem."

"I would do the same thing. DER would be my last resort."

"We had an instance one morning. The well water was dirty. We called DER right away and they came out within an hour and tested it. It looked like manure. A stream had broken in with muddy water. That's what I would call DER for."

"All I use water for on my farm is irrigation and washing vegetables so this problem really doesn't apply to me."

Private consulting firms and fertilizer dealers were the most frequently mentioned sources for fertilizer management information. Penn State University faculty and the local extension service personnel were also identified as sources of information by farmers. While a number of the farmers used fertilizer dealers for information, many did not trust their recommendations because they perceived the companies to have a vested interest. Typical responses included:

"I am with an agriculture service. They sell fertilizer and stuff like that. He allows so many percent for manure."

"Weigh your spreader loads and spread accordingly. Figure it out yourself."

"We use the nutrient management officer."

"I take a soil test and then use extension as a second source."

"Keep your records over several years and test."

"I wouldn't trust the fertilizer companies. They're just trying to make a sale."

"The fertilizer companies are not considering your manure."

Written sources of information were cited frequently by farmers in all three focus groups. Trade magazines and many other popular farming magazines were used as a primary source of information about water quality concerns. Extension and young farmer meetings were identified as a second source of information. Neighbors or "word of mouth" was also a source of information for each of the groups. Comments provided included:

"Magazines... *Farm Journal*, *Pennsylvania Farmer*, *Farm Show*, *Lancaster Farmer*."

"Talking to other people and talking to your neighbors."

"Attend as many meetings as possible to stay abreast of current technology, also magazines that come in the mail."

"I attend meetings that the Horticultural Society puts on."

"Meetings from the adult farmer programs held during the winter. That's the most useful source of information in this area because its based in this area."

Focus group participants depended most on their own common sense and experiences to determine

whether information could be trusted. Farmers use university provided information as a reliable source to compare other information. Literature such as magazines was cited as reliable sources of information if they were not promoting a product. Information is not taken at face value by most farmers. The farmers participating in these focus groups wanted the information to be confirmed by several sources. Comments included:

"Common sense tells you if it doesn't sound right you should check with someone else or check with your neighbors."

"Watch the neighbor."

"I trust other farmers more than I trust salesmen."

"You got to consider the source you get it from and just because they say it is so don't mean it is so. You got to look at it yourself."

"Most information should be backed up by university or test plots."

Media in the form of farm association newsletters and magazines are the predominate sources farmers used to gain knowledge about environmental issues. This finding corroborates previous studies reported by Lionberger & Gwin (1982), which indicate that farmers are introduced to topics through the media before they learn about it at a meeting. However, these farmers appeared to be biased against radio and TV as sources of information. These farmers generally felt that these sources of information sometimes distort the message. Some farmers indicated that they learned about some environmental issues through demonstrations they attended. Educational meetings were mentioned to a lesser extent. Responses included:

"Farmers association newsletter every week."

"Demonstrations are good. I like to see it practiced, but before I will attend I like to read about it first."

"Yeah, if I read about it in a magazine or something first, then I am more likely to attend."

"Magazines, but you should consider the source. *Wall Street Journal*, *Washington Post*, and trade newspapers."

"Radio and TV blow things out of proportion."

"Newspapers and 20-20 TV is beating us over the head with it."

"*Agricultural Progress Days*."

Factors Which Elicit Farmer Participation in Educational Activities

Farmers indicated that they participate in educational meetings based on a direct need and some type of a motivator. Motivators involved such things as a meal, money, the opportunity to actively participate, transportation to and from the meetings, and convenient scheduling. Responses included:

"You must be aware you have a problem before you will be interested in attending."

"If it pertains to my life or if it will improve my situation."

"Tell us we get a chance to speak up."

The findings noted above illustrate that farmers do use a variety of information sources to solve water quality related problems. The most reliable agencies for some sources of information in this study were local extension office personnel and adult farmer programs. Participants also reported that they used magazines and newsletters as a source of information. Newspapers and television were reported to be sources of information about water quality problems, but not considered reliable sources. The most used and trusted sources of information

were farmers' individual experiences and neighbors.

Farmers must have a specific need for information before they participate in an educational activity. The farmers in this study reported that they like to see the agenda for an upcoming activity in a newspaper or magazine before attending.

Implications

Education regarding water quality should be delivered to clientele groups with their active involvement. As farmers try to solve their own water quality problems, extension educators need to incorporate self-sufficiency into delivery systems. Farmers continue to trust their own and resent outside regulatory agencies (DER & EPA). However, farmers should be taught how to use and access the information provided by regulatory agencies. While farmers heavily rely on fertilizer dealers, they also appear to question the motives and the advice given regarding application rates and product use. Since farmers do seem to trust SCS, extension and adult educators, programs should be developed which use all of these groups.

Delivery strategies should include advertisements to local popular newspapers, such as *Lancaster Farmer*, so that farmers can read about the activity before attending. Environmental educational activities must pertain to local problems and the farmers who have control over management activities on these farms. However, since many farmers who may become interested in water quality improvement in the future are also identified today as major contributors to water pollution, effective communication strategies will need to be developed to bring the farmers "around" to an environmental perspective. According to Krueger (1988) only developing in-

terest is not enough to get clients involved in programs. Therefore, it will be critically important to get farmers actively participating in environmental programs.

In Arizona, Iams and Marion (1991) found that individuals were interested in learning about water quality through alternative delivery methods such as video tapes. In this study, it appeared that individuals did not find TV or video tape useful as major information factors. However, as we develop water quality programs we must be cognizant of the methods farmers will use. Factors which engage farmers to learn about water pollution and water quality must be incorporated into plans to deliver these messages. The water quality issue requires communication faculty and specialists to examine which factors will enhance farmer participation in activities and the informational methods farmers prefer.

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