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Abstract

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Communicating With Farmers About Environmental Issues

Thomas H. Bruening

Few studies have focused upon Extension's methods of communicating with farmers about specific issues such as the environment. This lack of information prompts questions about what communication methods do farmers find useful, what human resources do farmers find useful, and how serious are issues regarding the environment?

The primary purpose of this study was to identify the sources of information farmers find useful when confronted with environmental issues. A secondary purpose was to determine the perception that farmers have regarding environmental issues. A mailed questionnaire was sent to 481 Iowa farmers at random. The response rate was 59%. The farmers indicated that field demonstrations and county and local meetings were the most useful sources of information. Cooperative Extension Service, Soil Conservation Service, and the local seed/chemical/fertilizer dealers were the three most useful sources of human resources for learning about environmental issues. Pesticides were the most serious of four environmental issues, while farmers were uncertain about the seriousness of fertilizers, soil conservation, and water quality as issues.

Extension's move toward issue-based programming means that preferences which clientele groups have for various delivery systems must be considered more extensively. Issues-based programming means that we must be more efficient in our programming efforts and use communications methods which are appropriate for our clientele groups. However, few studies have been con-

ducted which focus simultaneously on issues-based programming and the communications methods needed to deliver this type of programming. For example, limited research was located about farmers' perceptions of the environment as an issue. In addition, no research was identified about how farmers prefer to become informed about environmental issues. Thus, this study was con-

Thomas H. Bruening is assistant professor in Agricultural and Extension Education at The Pennsylvania State University. He is an ACE member.

ducted to determine the perceptions that farmers have about (a) environmental issues and (b) their perceptions about the usefulness of various communication methods and human resources when they want to become informed about environmental issues.

Related Literature

Behaviorists see farmers as reactive creatures who change their behavior as a result of the positive experiences they encounter in the learning environment (Boyle, 1981). Believing this to be true, Seaman K. Knapp was one of the first individuals who sought to change farmers' behavior through the use of on-farm demonstrations. Knapp's efforts preceded today's nonformal educational delivery system known as the Cooperative Extension Service. Knapp believed that observable changes could be seen in the behavior of farmers who were exposed to positive stimuli provided by agents who worked closely with them on an individual basis (Rasmussen, 1989). The philosophy that Knapp espoused is perhaps not consistent with some of today's Extension programming. For example, many of today's programming efforts are delivered to farmers in group settings using a variety of methods and techniques. However, Extension is no longer alone in the educational delivery community. Numerous other public and private organizations now deliver educational programs to farmers (Bouare & Bowen, 1989).

Kramic (1987) investigated the importance that farmers place on and the confidence they have in educational programs conducted by 12 agencies. Farmers included in the Kramic study ranked educational programs that Extension agents conduct first in terms of both impor-

tance and confidence. Martin and Omer (1988) indicated that participants in Extension programs tend to be satisfied with the instruction they receive. They also found that 70 percent of Iowa young farmers ages 18-40 were satisfied or very satisfied with the information and services they had received. Habeeb, Birkenholtz, and Weston (1987) concluded that farmers who use the Missouri Extension Service were satisfied with agricultural Extension information, methods, and specialists. Further, Richardson (1989) indicates that Extension agents and communicators must tailor their methods to effectively deliver information to farmers and other clientele.

From a methodological standpoint, Cross (1981) found in a nationwide study that more than 70% of adults want instruction delivered by methods other than lecture. However, this same group of adults indicated that lecture was the most frequently used delivery technique. A number of Extension studies have identified the value of instructional methods used by agricultural educators. When presented with a list of 17 methods, Iowa young farmers ranked county and local meetings and demonstrations among the top four. Using a similar list of methods, Ohio farmers ranked meetings and clinics conducted by Extension agents first in confidence and importance (Kramic, 1987).

From an environmental perspective, Iowa young farmers believe that chemical safety and soil fertility are important topics that they need to study (Martin & Omer, 1988). However, these farmers ranked production topics such as crop marketing and management as being more important. Burhoe and Stewart (1983) determined that business

management is the most important information about environmental issues. During the 1980s, there was an educational need of farmers. In addition, Bouare and Bowen (1989) reported that Ohio Extension agents and agricultural education teachers spent most of their instructional time delivering instruction to farmers about livestock and general agricultural production topics. In a conservation tillage study, Stiegler (1987) found that information from technical sources such as universities and the Agricultural Research Service was most useful. In a related study, the Freshwater Foundation (1987) found that farmers want to participate in more demonstration projects which stress hands-on experience.

Purpose and Objectives

Agricultural Extension agents and communicators provide a variety of programs to farmers through a number of approaches. However, few studies have examined the sources that farmers find useful for gaining information about environmental issues. The multi-faceted question facing Extension agents and agricultural communicators is, "What content should be communicated by which resources utilizing which delivery system?" Thus the primary purpose of this study was to identify the sources of information that farmers find useful when confronted with environmental issues. A secondary purpose was to determine the perceptions that farmers have regarding environmental issues. The study had three objectives:

1. To describe perceptions held by farmers regarding selected environmental issues.

2. To identify information sources farmers find useful when confronted with environmental issues.

3. To identify which human resources farmers use to acquire infor-

Methods and Procedures

The research design of this study was classified as descriptive survey. The population for the study included all 109,367 farm operators in Iowa as determined by the Agricultural Stabilization and Conservation Service (ASCS). A sample of 481 farmers was selected using stratified random selection procedures. The sample was stratified by county. The sample size was determined using a formula suggested by Krejcie and Morgan (1970) to reflect a 5% margin of error.

Data were collected with a mailed questionnaire. Part I contained 32 items about the seriousness of selected environmental issues. Farmers rated the items using a five point Likert scale. Parts II and III gathered descriptive data about farmers' tillage and soil and water conservation practices. Part IV gathered data about information sources that farmers use to learn about environmental issues.

A panel of experts consisting of Iowa Extension personnel, a soil conservation district commissioner, a staff member from the State ASCS office, and the president of the Soil Conservation District Commissioners Association determined that the instrument had the desired content validity. The questionnaire was then pilot tested with a group of farmers not included in the sample. A Cronbach's alpha reliability coefficient of .84 was calculated for the questionnaire. Reliability coefficients for the four subscales ranged from .78 for Part I to .95 for Part IV.

After four follow-up mailings, usable data were received from 236 farmers (59%). Early and late respondents were compared as suggested by Miller and Smith (1983). A t-test indicated no significant difference ($p > .05$) between the two groups

on their perceptions of environmental issues and sources of information. Thus, the researcher concluded that farmers who returned the instrument and those who did not had similar perceptions about the environment. Descriptive statistical procedures were employed to analyze the data.

Findings

Demographic characteristics of the farmers are summarized as follows. The farmers had an average of 23 years of farming experience and 12.7 years of education. They owned 196 acres and 11% used no-till or ridge till planting systems.

Objective 1: To describe perceptions held by farmers regarding selected environmental issues.

The farmers responded to 32 Likert-type items (1= strongly disagree, 2= disagree, 3= uncertain, 4=

agree, and 5 = strongly agree) that sought to identify their perceptions about the seriousness of selected environmental issues. Means for the perceived seriousness of four categories of environmental issues are reported in Figure 1. Farmers indicated that pesticide use is the most serious issue (mean of 3.79), followed by soil conservation (mean of 3.30), fertilizers (mean of 3.22), and water quality (mean of 3.19). These data indicate that Iowa farmers perceive that pesticides are a serious issue. However, these farmers are somewhat uncertain about the seriousness of soil conservation, water quality, and fertilizer as environmental issues.

Objective 2: To identify information sources farmers find useful when confronted with environmental issues.

Farmers were asked to indicate

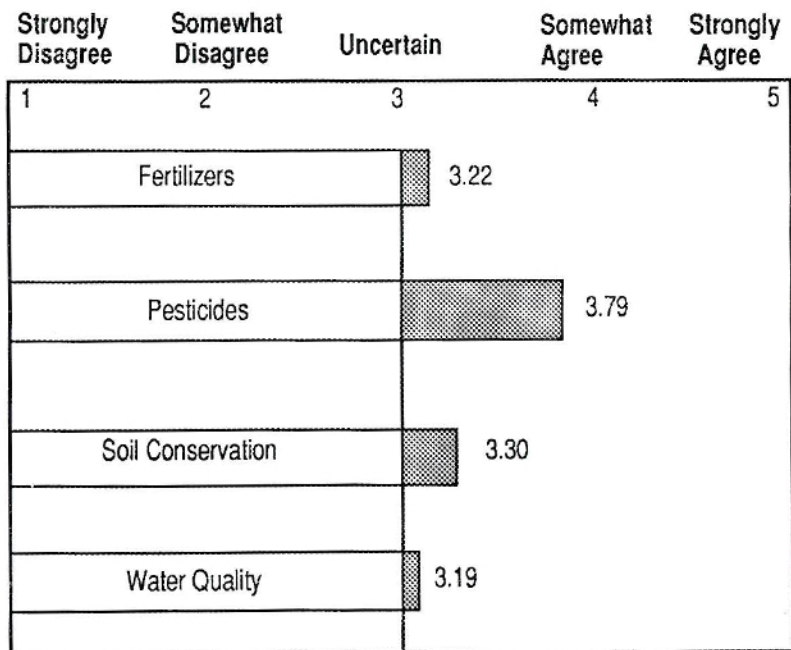


Figure 1. Seriousness Of Four Categories Of Environmental Issues

the usefulness of participating with Farm groups in information about environmental issues.

As shown in Figure 3, Iowa farmers rate the Cooperative Extension Service as the most useful human information source. Iowa farmers also indicate that local chemical dealers, the Soil Conservation Service (SCS), neighbors and friends, and Iowa State University Extension specialists are useful information sources. The farmers are uncertain about the usefulness of district soil conservation directors, vocational agriculture instructors, machinery dealers, and ASCS personnel as information sources from which they can seek

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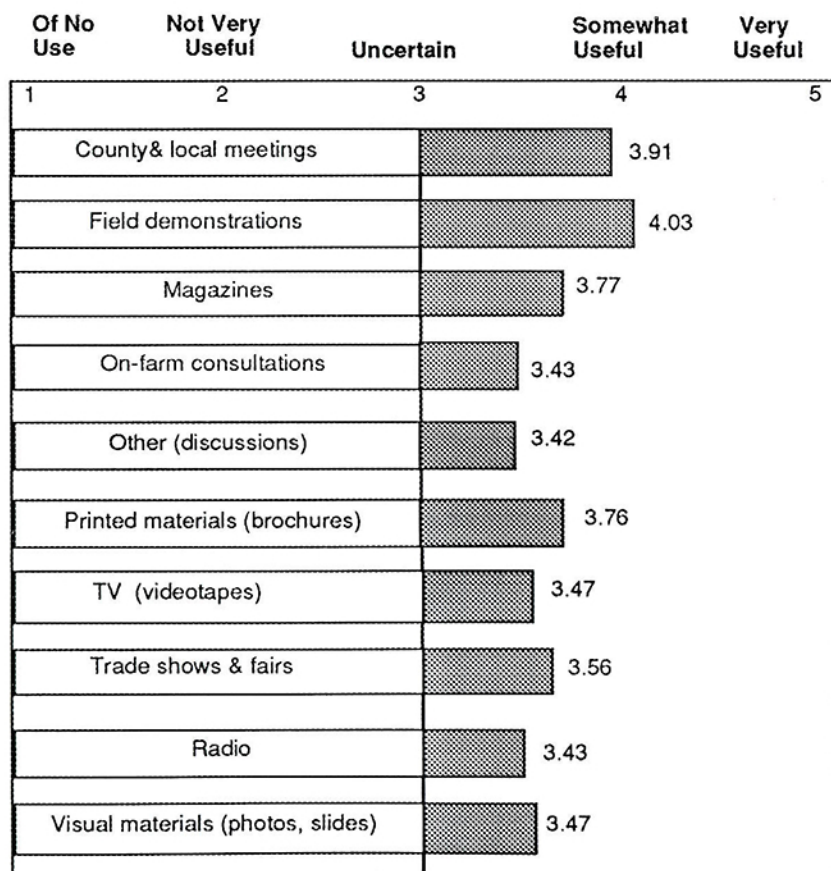


Figure 2. Usefulness Of Communications Methods For Learning About Environmental Issues

information about environmental issues.

Discussion and Implications

In 1988, Extension redefined its mission to focus on issues and needs of the clientele groups (Rasmussen, 1989). Water quality was identified as one of eight key issues. Further, the '90s have been described as the decade of environmental issues. The decision then becomes to identify which communications methods and which human resources should be used to deliver information for clientele groups.

Understanding the characteristics of farmers in terms of who participates and the reasons for their participation is important for educators who plan and deliver educational programs for farmers. Farmers

included in this study have vast farming experiences upon which to draw, but limited formal education beyond high school. These farmers used reduced tillage equipment less than farmers included in the Stiegler (1987) study. In that study, Stiegler reported that 40% of the farmers in the Cornbelt had either tried, used, or recommended no-till planting systems.

Farmers included in this study agree that the pesticide issues are important. Ratings for pesticides reflect the concern in Iowa over the widespread use of insecticides and herbicides. The Groundwater Protection Act passed by the Iowa Legislature in 1987 was prompted by uncertainty that water samples tainted with agricultural chemicals pose threats to human health

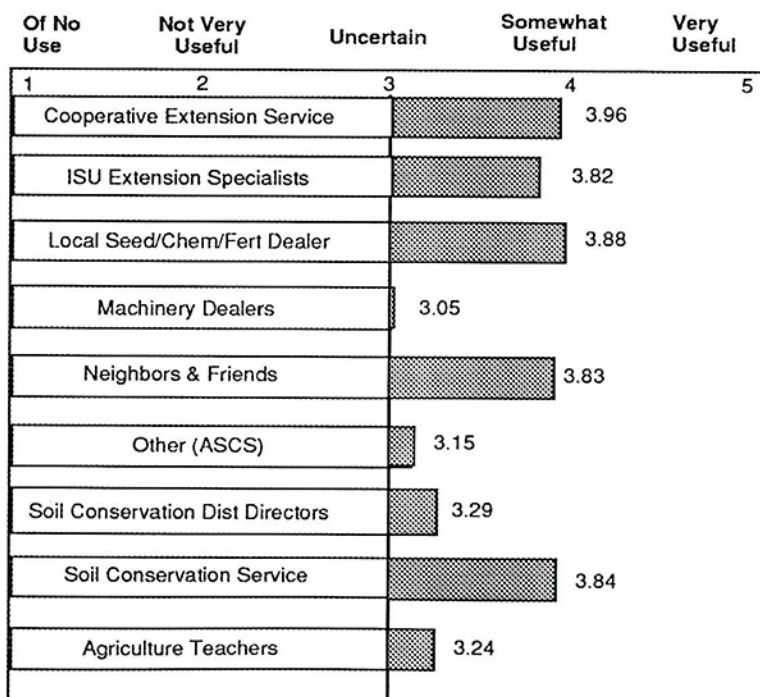


Figure 3. Usefulness Of Human Resources For Learning About Environmental Issues

(Hallberg, 1986). **Communicating With Farmers About Environmental Issues**
 Findings of this study suggest that farmers are uncertain about the seriousness of environmental issues such as water quality, fertilizers, and soil conservation. These findings are important in the face of the programs that are being targeted by state and federal Extension organizations. For example, the federal Cooperative Extension system has selected water quality as one of eight key programming issues.

The findings of this study suggest that information about environmental issues should be disseminated primarily through field demonstrations and meetings where two-way communication is enhanced. This finding is consistent with Knapp's approach, "so that they can see the benefit on their own farms."

The findings of the Korsching, Hoban, and Maestro-Scherer (1985) Iowa conservation study corroborate the usefulness of magazines as a communications method. However, this finding does not match the low rating that magazines received in an Ohio study about the methods that Extension agents use (Bouare & Bowen, 1989).

The findings of this study also support the need for Extension to continue its programming efforts relative to environmental issues. Farmers included in this study agree that pesticide use is a serious issue. However, the ratings for seed/chemical/fertilizer dealers and neighbors and friends indicate that farmers are relying heavily on the private sector, as well as the public sector such as the Soil Conservation Service and Iowa State University Extension specialists, to supply information about environmental issues. This finding corroborates the Bouare and Bowen (1989) finding that farmers are gaining information from sources outside of traditional educational channels.

Recommendations

The following recommendations are made based on the findings of the study.

1. Extension agents and communicators should incorporate the findings of this study when designing and conducting environmentally-oriented programs for farmers.
2. Extension faculty who instruct teaching methods and communications courses should use the findings of this study when designing experiences for agents and communicators who will deliver adult farmer educational programs.
3. Additional research is needed to determine how Extension agents and communicators can more effectively tailor their methods to meet the unique challenges that issues-based programming presents.

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