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Communicating With Farmers About Environmental Issues

**Abstract**
Few studies have focused upon Extension's methods of communicating with farmers about specific issues such as the environment.

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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 conducted 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-

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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 importance 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
mana geme nt Is the most Imp o rtant educational need of farmers. In addi­
tion. Bouare and Bowen (1989) re­
ported that Ohio Exten sio n agents
and agricultural educatio n te ac h e rs
spent most of their Instru c tional time
delivering instruction to farmers
about livestock and general agricu l­
tural production topics. In a con­
servation 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 vari­
ety 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 agricu­
tural communicators is, “What con­
tent should be communicated by
which resources utilizing which de­
livery 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 sec­
ondary 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 envi­
ronmental issues.

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

3. To identify which human re­
sources farmers use to acquire infor­
mation about environmental issues.

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 Ser­
vice (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 se­
lected environmental issues. Farm­
ers rated the items using a five point
Likert scale. Parts II and III gathered
descriptive data about farmers’ till­
age 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 coeffi­
cient 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 re­
spondents were compared as sug­
gested by Miller and Smith (1983). A
t-test indicated no significant differ­
eence (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

<table>
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<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Uncertain</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
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<td>Pesticides</td>
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<td>Water Quality</td>
<td></td>
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<td>3.19</td>
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Figure 1. Seriousness Of Four Categories Of Environmental Issues
the usefulness of selected communica-
tions methods and programs when
they want to learn more about envi-
ronmental issues. As shown in Fig-
ure 2, field demonstrations and
local and county meetings are rated
as most useful. These farmers also
indicate that magazines, brochures,
and trade shows and fairs tend to be
useful methods of communication.
Iowa farmers are uncertain about
the usefulness of radio, on-farm con-
sultation, and discussions as com-
munications methods to learn about
environmental issues.

**Objective 3:** To identify which
human resources farmers use to ac-
quire information about environmental issues.

As shown in Figure 3, Iowa farm-
ers 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 use-
fulness of district soil conservation
directors, vocational agriculture in-
structors, machinery dealers, and
ASCS personnel as information
sources from which they can seek

![Figure 2. Usefulness Of Communications Methods For Learning About Environmental Issues](image-url)
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 Stiegl (1987) study. In that study, Stiegl 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.
However, the 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.

References


Freshwater Foundation. (1987). Agricultural chemicals and ground-


