

Farmers' Preferences for Methods of Receiving Information on New or Innovative Farming Practices

Lou E. Riesenber, Associate Professor
Christopher Obel Gor, Graduate Student
University of Idaho

Today, more than ever, a wide range of information sources on new or innovative farming practices is available to farmers. However, there is little evidence that the increased availability of information sources has been effectively used by farmers (Lionberger & Gwin, 1982). The value of information as a commodity in today's information age cannot be overemphasized since it has contributed immensely to the stagnation or progressiveness of many farming operations. In today's agricultural industry, survival often depends on having an edge on information related to the market, efficient allocation of available resources, and use of new or innovative farming practices (Fedale, 1987).

Charges have been leveled against the Cooperative Extension Service, other change agents, and research centers, that much useful technology has been left sitting idle in research centers for lack of appropriate information dissemination strategies (Malton, Cantrell, King & Benoit-Cattin, 1984). The stumbling block has often been the communication gap between researchers and extension personnel on the one hand and farmers on the other. The contention is that the communication gap lies not so much in language or cultural differences as in the methods employed for the dissemination of agricultural information.

Various methods, including field trips, guest speakers, group discussions, workshops, on-farm demonstrations, audio-visual materials, printed matter, and interactive telecommunications have been advocated by Extension practitioners for information dissemination in agriculture.

Darisme (1984), Lindner (1981), and Rogers (1983) defined interpersonal sources of information as those involving face-to-face exchange between individuals, and mass media sources as those enabling one or a few individuals to reach an audience of many. A third category of communication system has been recognized since the early 1980's and categorized as "machine-assisted interpersonal communication" (Rogers, 1983).

Interactive electronic systems, videos, satellite dishes, and computers are among the latest machines in the market for agricultural information dissemination systems. Rogers (1983) observed that these new interactive technologies have been available for a short time and have not yet become widely adopted in the United States. Their potential impact is, however, quite high.

With the Extension Service experiencing a continuing reduction in force, more emphasis is being placed on the use of mass media for information transfer. The reduction in force necessitates a transition from the traditional interpersonal methods of information transfer, such as on-farm demonstrations and conferences, to mass media methods, such as publications, computer-assisted instruction and home study and eventually to interactive video and telecommunications. The use of mass media methods of information transfer has the potential to greatly increase the efficiency of individual practitioners, but, what will be the gain if the users of the information do not prefer, and therefore, can not or will not utilize the advanced sources.

A pronounced change has already taken place in the United States and several other advanced nations marked by the importance of information as a vital element in the new society that has emerged. The distinctive feature of the information society is in the makeup of the work force. Information workers are individuals whose main activity is producing, processing, or distributing information, and producing information technology (Rogers, 1983).

These changes and the observed transition to an information society, formed the basis for this study. A need was felt to determine how farmers perceive the information sources presently at their disposal. Farmers' preferences for presently available methods of information transfer should aid in designing future information disseminating systems.

Purpose and Objectives

The purpose was to identify and describe the sources of information considered credible, beneficial, and preferable by farmers, and how the identified sources can be used effectively in disseminating information on new or innovative farming practices. The following were specific objectives of the study:

1. To identify the preferred methods of receiving information on new or innovative farming practices among farmers in Nez Perce County, Idaho.
2. To identify the differences in farmer characteristics as related to preferences for methods of receiving information on new or innovative farming practices among farmers in Nez Perce County, Idaho.

Procedures

The population was comprised of farmers in Nez Perce County whose names and addresses were on file with the County Extension Office. Three hundred eighty-six (386) farmers qualified as subjects for the study. Farmers from Nez Perce County were selected because of the county's array of agricultural information sources and a well established cooperative extension service.

A self-administered fixed-response mail questionnaire was developed as the data collection instrument. A part of the survey instrument sought farmers' preference for 9 methods of information transfer. The subjects were asked to rate the 9 methods on a 4-point Likert-type scale with 1 indicating most preferred and 4 indicating least preferred. The instrument was field-tested for clarity with farmers in two other counties and reviewed for validity by the faculty of Agricultural and Extension Education and the Cooperative Extension Service.

The instrument was mailed with a cover letter to 386 farmers in Nez Perce County, Idaho. A follow-up postcard served as a reminder. A second and third follow-up letter and survey instrument were mailed to the non-respondents. A telephone interview of 5% of the non-respondents suggested the most frequent reasons for not responding were lack of time and no interest and, therefore the responses received were judged as representative.

The overall response rate for the study was 58.3%. Of the 225 instruments returned, 10 were undeliverable, while 55 instruments were returned by individuals no longer farming. By subtracting the undeliverable

instruments and those that had gone to non-farmers, the potential pool was reduced from an original 386 to 321 farmers. There were 176 usable instruments returned, for a usable return rate of 55%.

Friedman's Two-way Analysis of Variance (ANOVA) were used to generate the mean rankings of respondents' preferences for methods of receiving agricultural information. The Kruskal-Wallis One-way ANOVA measured differences in the pattern of responses based on the independent variables (farm size, years in farming, age, level of education, and gross income from farming). The Mann-Whitney U was then applied to all possible pairs of contrasts of the groups within the independent variables. Alpha was set at the more stringent $p < .01$ in accordance with postfactum analysis procedures. The analysis was used to determine which groups differed significantly in how they rated the dependent variable under study i.e., the method of receiving agricultural information. Tabular results of the Mann-Whitney U analyses have not been included in this report.

Non-parametric statistical tests were used to analyze the data since data were collected using an ordinal 4-point scale and, therefore, did not satisfy the requirements for parametric tests. Reliability (Cronbach's alpha) of the preference scale used was estimated as $\alpha = .76$.

Findings and Discussion

The farmers in the study were asked to indicate their preferences for various methods of receiving information on new or innovative farming practices. Table 1 shows the different methods and the farmers' preference for each. Interpersonal methods (A) include on-farm demonstrations, tours and field trips, group discussions, guest speakers and consultants, workshops, and practical short courses. Mass media methods (B) include publications (journals and bulletins), computer-assisted instruction, and home study (fact sheets and video cassettes).

Table 1
Respondents' Preference for Methods of Receiving Information on New or Innovative Farming Practices

Method	Mean Rank**	Preference Categories			
		Most	Somewhat	Slightly	Least
On-farm demonstrations(A)	3.10	54.3	28.6	7.4	1.1
Tours and field trips(A)	3.44	48.6	37.1	5.1	3.4
Publications(B)	4.53	19.4	47.4	18.9	5.1
Group discussion(A)	4.55	24.6	49.1	11.4	5.1
Guest speakers and consult.(A)	4.61	20.6	49.7	13.7	7.4
Workshops(A/B)	4.86	21.1	42.3	20.0	6.9
Practical short courses(A)	5.02	20.0	40.6	20.0	6.9
Computer-assisted instr.(B)	7.08	4.6	18.3	29.1	36.0
Home study(B)	7.82	1.7	9.1	27.4	47.4

Note. A = interpersonal methods of information transfer.

B = mass media method of information transfer.

** Mean rank from Friedman's Two-way ANOVA indicates relative order of respondents' ratings in descending order; i.e., lowest mean rank = highest preference rating.

Respondents rated on-farm demonstrations (54.3%) as the most preferred method, while 48.6% of respondents rated tours and field trips as most preferred. The mean rank of each of the methods, from Friedman's Two-way ANOVA, indicates the relative order of the respondents' ratings in descending order. On-farm demonstrations received the lowest mean rank and therefore, the highest preference rating as a method of receiving information on new or innovative farming practices. Tours and field trips also received a relatively low mean rank. Publications, group discussion, guest speakers and consultants, and workshops and practical short courses all received higher mean ranks than on-farm demonstrations, and therefore, medium preference compared to on-farm demonstrations and home study. Home study and computer-assisted instruction received the highest mean rank as methods of receiving new or innovative farming practices and were rated as the least preferred.

The two methods requiring the most interaction between the sender and receiver of information, on-farm demonstration and tours and field trips, also received the highest preference ratings, while the two methods requiring the least interaction between the sender and receiver of information, home study and computer-assisted instruction, received the lowest preference ratings.

To further investigate the preference of farmers for different methods of receiving agricultural information, five farmer characteristics were utilized as independent variables: farm size, years in farming, age, level of education, and gross income from farming. The variables farm size, age, and level of education provided additional information about the respondents' preference for the different methods. Table 2 shows the distribution of the respondents on the three variables.

Table 2
Distribution of the Respondents over Three Demographic Characteristics

Demographic Characteristic	Freq.	Percent
Farm Size		
Less than 250 acres	29	16.6
250 to 500 acres	25	14.3
501 to 1000 acres	45	25.7
1001 to 1300 acres	20	11.4
More than 1300 acres	46	26.3
Age		
20 to 35	24	13.7
36 to 51	50	28.6
52 to 65	53	30.3
66 or more	44	25.1
Education		
Attended or graduated from high school or completed the GED	75	42.9
Attended or graduated from a post-secondary vocational/technical program	22	12.6
Attended or graduated from a four-year college or university with a major in ag	45	25.7
Attended or graduated from a four-year college or university but did not major in ag	31	17.7

The responses of the farmers were compared on the basis of farm size, age, and level of education. Table 3 shows the methods of receiving information on new or innovative farming practices, the independent variable groups, the resultant chi-square values of the analyses and the probability of the chi-square values. When compared on basis of farm size groups, the respondents different significantly in their pattern of responses only for the publication method of receiving agricultural information.

Table 3

Kruskal-Wallis Analysis of the Respondents' Preference for Methods of Receiving Information on New or Innovative Farming Practices by Farm Size, Age, and Education

Method	Chi-Square	Significance
By Farm Size		
Publications(B)	13.3740	0.0096 *
Workshops(A/B)	8.1986	0.0846
Group discussion(A)	6.6871	0.1534
Computer-assisted instructions(B)	5.3696	0.2514
On-farm demonstrations(A)	5.3696	0.2760
Home study(B)	4.0537	0.3988
Practical short courses(A)	3.8440	0.4275
Guest speakers and consultants(A)	2.7141	0.6067
Tours and field trips(A)	2.3970	0.6632
By Age		
Computer-assisted instruction(B)	12.8615	0.0049 *
Home study(B)	9.8586	0.0198 *
Publications(B)	8.7009	0.0335 *
Group discussion(A)	6.5205	0.0889
Tours and field trips(A)	5.7649	0.1236
On-farm demonstrations(A)	2.4810	0.4787
Guest speakers and consultants(A)	1.8765	0.5984
Workshops(A/B)	1.4228	0.7002
Practical short courses(A)	0.6210	0.8916
By Education		
Publications(B)	11.8608	0.0079 *
Computer-assisted instruction(B)	8.2527	0.0411 *
Home study(B)	7.9305	0.0475 *
Practical short courses(A)	5.8746	0.1179
Guest speakers and consultants(A)	4.0404	0.2571
Group discussion(A)	4.0185	0.2595
On-farm demonstrations(A)	3.3390	0.3425
Tours and field trips(A)	3.0685	0.3819
Workshops(A/B)	2.9068	0.4063

Note. * Significant difference in response pattern with $p < .05$.

To investigate this difference further, the Mann-Whitney U test was applied to all possible pairs of farm size from Table 2. Significant differences in the preference for publications were evident between the group farming 501 to 1000 acres and the <250-acre group. The larger-farm group indicated a stronger preference for publications than did the smaller-farm group.

When age was used as the basis for the Kruskal-Wallis analysis of the respondents' preferences for methods of receiving agricultural information, response patterns differed significantly for three methods: computer-assisted instruction, home study, and publications. Again, the Mann-Whitney U test was used to investigate their differences. The group aged 20 to 35 years differed significantly in the pattern of responses from the group aged > 66 years. In rating home study, computer-assisted instruction, and publications as methods of receiving agricultural information, the younger group showed a greater preference for all three methods than the older group.

Kruskal-Wallis analysis of the respondents' ratings of methods of receiving agricultural information based on level of education indicated significant differences in the pattern of responses on three methods: publications, computer-assisted instruction, and home study. The Mann-Whitney U test revealed significant differences in the pattern of responses between the group of farmers who had attended or graduated from a college of agriculture and the other three groups. The farmers who had attended or graduated from a college of agriculture gave a significantly higher preference rating to all three methods in question: publications, computer-assisted instruction, and home study.

Conclusions and Recommendations

When the methods of receiving agricultural information are classified as interpersonal and mass media methods, farmers prefer interpersonal methods of receiving information on new or innovative farming practices, eg., on-farm demonstrations, tours and field trips), over the mass media methods, eg., computer-assisted instruction and home study. Examples of interpersonal (on-farm demonstrations) and mass media (home study) methods are at opposite ends of the preference scale.

Younger farmers, aged 20 to 35 years, tend to prefer computer-assisted instruction, home study, and publications more than the farmers aged 66 years and older. Farmers farming larger acreages tend to prefer publications as a method of receiving information on new or innovative farming practices more than farmers with acreages less than 250 acres. Farmers with college of agriculture experience tend to prefer publications, computer-assisted instruction, and home study more than farmers without college of agriculture experience.

Extension practitioners and planners who design or disseminate agricultural information should recognize the apparent patterns in preferences based on age, educational status, and farm size towards methods of receiving information on new or innovative farming practices. Such recognition is warranted by the fact that variations do occur, and the more the relations between these subsets of independent variables and farmer preferences are identified, the more successful the dissemination process will be.

As alternatives to the traditional information transfer systems are planned, the attitude of the receivers toward the alternative methods must be considered. Most decisions about alternative methods of information transfer, especially the mass media methods, are apparently made from the sender's, rather than receiver's, viewpoint, and are based on the data about the input process, i.e., how to assemble, package, and distribute information, and not the output process, i.e., how to access, interpret and apply information to problems.

In order for Extension practitioners and planners to effectively utilize the mass media methods for dissemination of agricultural information, more attention will have to be given to educating farmers and other agriculturists to become more competent and confident in using the new information sources to solve specific problems using general information. The high preference given in this study to interpersonal methods seems to indicate farmers prefer the traditional assistance in applying general information to a solution of their specific problems.

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