AGRICULTURAL ISSUES OF SIGNIFICANCE TO IOWA CROP PRODUCERS AND THEIR EDUCATIONAL IMPLICATIONS

Melea A. R. Licht, Communications Specialist
Robert A. Martin, Professor and Chair
Iowa State University

Abstract

The purpose of this study was to determine the agricultural information preferences of crop producers in Iowa and the implications for agricultural extension education. The objective was to identify agricultural information issues producers perceive as significant to their businesses. The results will help agricultural extension educators and communicators make informed decisions regarding program content and delivery. To identify these needs and preferences, this study consisted of five crop producer focus groups held throughout Iowa. Focus group data were collected as audiotapes and transcriptions. Analysis was performed through theme coding and qualitative data charts. Conclusions based on findings included: 1) needs assessments can be used to identify issues about which producers desire more information; 2) producers perceived local, timely, marketing, and management issues as significant; and 3) producers considered the source of research funding when determining the reliability of research results. Based on these conclusions the following recommendations were made: 1) educators should select program topics according to timeliness, location, and operation type of their target audience, 2) marketing or management recommendations and updates are meaningful topics to include in educational programs, and 3) educators should report the sources of funding when presenting research findings.

Introduction/Theoretical Basis

Extension educators can best serve the needs of their clientele if they have identified and analyzed their target audience. Understanding the target audience including its demographic characteristics, levels of knowledge, perceptions of issues, and preferences and use of communication channels aids educators in crafting programming most suited to their clientele (Bruening, Radhakrishna, & Rollins, 1992; Kotile & Martin, 2000; Richardson & Mustian, 1994).

Kotile and Martin (2000) suggest that agricultural extension educators continually profile producers in order to best serve their educational needs. In addition to identifying needs, Martin and Omer (1987) also suggest the information gathered in audience analysis can be used to prioritize educational needs. This type of on-going audience analysis can be used to plan and revise educational programming to address issues in alignment with producers' priorities (Martin & Omer).

The study reported here was based on the premise that understanding the needs and preferences of Iowa producers will allow Iowa agricultural extension educators and communicators to make informed decisions regarding program content and delivery. In order to make these decisions, the needs, interests, and problems of audiences must first be identified through some type of needs assessment.

Needs assessment is an essential step of educational program design. Based on its role in the process, it could be considered the foundation for the entire educational program planning process (Knowles, 1980; Pearce, 1998; Pratt, 1980; Witkin, 1984). Needs assessment is a "systematic approach to setting priorities for future action… it entails making choices among goals, based on shared values, and appraising gaps between those goals and the current reality" (Witkin, pp. ix-x). According to Pearce (p.

254), most program-planning models in adult education consider those "gaps," or needs, "the difference between an individual's current state of knowledge or skill and a specified norm," based on Tyler's (1949) definition of needs. Knowles explains the interests of adults may be the starting point in planning education programs while the end objective is to meet their needs. He mentions one of the top skills of adult educators is using adults' interests to help them discover and become interested in their own needs (Knowles).

Previous literature regarding the use of needs assessment illustrates that the resulting identified needs, interests, and problems of clientele may help determine the most efficient use of limited financial resources, including program development and delivery, to achieve maximum educational success (Edwards, McLucas, Briers, & Rohs, 2004).

Earlier studies examining the topics or issues Iowa producers find significant show a strong emphasis on agribusiness management, production decisions, and local, farm-specific issues (Kotile & Martin, 2000; Martin & Omer, 1987; Nelson & Trede, 2004). Martin and Omer (1987) surveyed young Iowa producers to determine what issues they ranked as important for educational programs. They listed marketing, record keeping, and production management as the most important topics for educational programs. The most highly ranked topics in crop production were marketing, production records, and soil fertility. Production records, marketing, production management, and health and diseases were the top issues listed for livestock production (Martin & Omer).

Iowa producers indicated they were most interested in learning about practices specific to their operation according to Kotile and Martin (2000). They were next most interested in learning about soil fertility management and crop rotation among sustainable agricultural weed control issues. They also listed a strong interest in cultivation for weed control. The researchers recommended providing producers information at a local level and emphasizing the potential for economic profit (Kotile & Martin).

A study by Nelson and Trede (2004) found that Iowa extension professionals rated six business and management topics as most important to beginning producers. They were financial management, record keeping, budgets and analysis, farm markets, marketing strategies, and strategic planning. They also rated crop and livestock production practices, technology, and management as important; however, those issues did not rank in the top six areas of importance. The researchers found the topics extension professionals identified as most important to producers in this study closely matched the responses of beginning producers in a previous study by Trede and Whitaker (1998) and one by Nelson and Trede.

Research findings based on input from Iowa producers have been similar to those of producers in other states. A study of Michigan producers and agribusiness professionals by Suvedi, Lapinski, and Campo (2000) found marketing was the most frequently requested topic for future extension programs and information. Respondents also indicated the need for information that was specific to their location and type of operation. A study surveying small producers in West Tennessee found some similar results. Respondents in that study felt a need for educational programs in the areas of crop marketing, soil conservation, and pesticide use (Ford, 1995). Pennsylvania producers indicated water pollution and manure mismanagement as the most serious environmental issues in a study by Bruening et al. (1992). Those researchers compared their results to a previous study performed by one of the authors with Iowa producers and found Iowa producers had similar perceptions (Bruening et al.). Regarding a more general audience, Richardson and Mustian (1994) found that North Carolina extension clientele expressed interest in information that was relevant and specific to their needs.

Research involving "adult agricultural educators" also provides useful background on what topics interest crop producers. Ohio adult agricultural educators indicated crop

and livestock production were the most important topics to address in educational programming in a study by Bouare and Bowen (1990). Respondents in this study ranked horticulture and agricultural mechanics as least important.

Previous literature supports the claim that, as part of audience analysis, understanding which issues producers perceive as significant allows agricultural extension educators and communicators to identify the educational needs of their clientele. They may then use these identified needs to select topics for their educational programming. With this information, educators can best use their limited financial resources to target programming regarding learner-specific issues, while de-emphasizing the use of funds on program areas not perceived as significant. These findings, in combination with complete audience analysis and targeted use of communication methods, will assist educators in crafting and delivering effective and meaningful educational programs.

Purpose and Objective

The overall purpose of this study was to determine the agricultural information preferences of crop producers in Iowa and the implications for agricultural extension education. The objective was to identify agricultural information issues producers perceive as significant to their businesses.

Materials and Methods

The focus group method of qualitative data collection was selected for this study because it is well-suited for gathering information about how people feel, think, believe, and behave (Larson, Grudens-Schuck, & Allen, 2004; Morgan, 1998a) and because it is an established method of performing needs assessment (Plaut, Landis, & Trevor, 1993). Focus groups are guided interactive group discussions designed to gather perceptions, comments, and ideas from participants about a defined area of interest in a friendly, non-threatening environment (Litosseliti, 2003; Morgan, 1998a; Morgan & Krueger, 1993). Focus groups often are used in program planning and community development, including extension work (Larson et al.). They also provide a venue for feedback that may not otherwise exist, especially between groups with varying degrees of power such as participants and decision-makers or, as is the case in this study, crop producers and academics (Morgan & Krueger).

Litosseliti (2003) suggests focus groups create a more natural environment for data collection than other types of qualitative research. Within the groups participants are constantly influencing and being influenced by others, just as they are during normal social interaction (Litosseliti). The comments made among group members can lead to exploration of a range of opinions, or group dynamics may come into play creating synergy, which would allow the group to form consensus (Kitzinger, 1999; Litosseliti). This interactivity makes focus groups especially useful for identifying needs and limitations that could be missed through other forms of research (Gamon, 1992).

Expert recommendations vary, but generally a focus group consists of six to twelve people per discussion session, and often more than one session is held (Gamon, 1992; Grudens-Schuck, Allen, & Larson, 2004; Litosseliti, 2003). Focus group data are collected as audiotapes and transcriptions. The raw data relies on participant responses and moderator notes including language patterns, tone of voice, and body language in addition to their verbatim comments. It is generally considered inappropriate to report data by percentages or other quantitative methods (Grudens-Schuck et al.; Krueger, 1998a).

This study consisted of five focus groups involving three to nine producers in each group. Eight to 12 producers in each group were confirmed for participation. A focus group was held during the month of December 2004 in five communities throughout Iowa: Bedford, Clarion, Riceville, Storm Lake, and Washington. In total, 29 producers participated in the study. These procedures align with recommendations from Morgan (1998b) that focus group research involve more than one group depending on the topic, the diversity

of the target population, including possible responses and previous experience, and the location of the groups. A typical number of sessions for focus group research is between three and five (Morgan, 1998b).

Participants were selected based on recommendations from Iowa State University Extension Field Crop Specialists. The Field Crop Specialists provided a convenience sample of local producers they thought would be active participants in the study and whose operations were representative of crop production in the area. The Field Crop Specialists were asked to recommend similar participants regarding operation. Composing a group of people with similar characteristics enhances the quality of data because people tend to express personal views and disclose more to others they perceive as similar to themselves (Grudens-Schuck et al., 2004; Litosseliti, 2003).

Participants in the focus groups were Caucasian males who farmed corn and soybeans with ages ranging from late twenties to early sixties. Following Krueger's suggestions for collecting demographic data, participants' observable characteristics such as gender, age, and race were noted by the researcher and information about their individual farm operations were discussed during the introductory segment of each focus group session (Morgan, 1998a).

Field Crop Specialists made initial contact with producers to get permission to submit their names for consideration in the study. Secondary contact and all follow-up communications were made by the researcher. The first contact by the researcher was a telephone call to introduce the study's concept and to determine if the producer would like to participate. Producers with spousal business partners were encouraged to invite their spouse as well. Those who agreed to participate were mailed reminder letters prior to the meeting. A total of 115 producers were recommended for the study and were contacted by the researcher to determine their interest in participating in the study (29 participated).

Focus groups were held in ISU County Extension or community buildings. Only the participants and the researcher were present during each discussion. The researcher served as both moderator and recorder. Morgan and Krueger (1993) suggest that using amateur moderators from within the research group is acceptable, and in some cases preferable. It is especially preferred when research questions are continually changing, when the moderator must be familiar with participants' language and viewpoints, as was the case in this study, or with the goals of the research project (Morgan & Krueger). In addition to following published focus group procedures, the researcher participated in two workshops prior to conducting the research to gain a greater understanding of conducting focus groups and analyzing the resulting data (Boone & Doerfert, 2003; Miller, 2004).

Focus group sessions were limited to 90 minutes, since most focus group experts recommend discussion last no longer than two hours (Grudens-Schuck et al., 2004; Morgan, 1998b). Participants were provided with a meal following or preceding the focus group session and were also given a small incentive gift, a coffee mug, for participating.

A discussion plan was created prior to the focus groups. As suggested by focus group experts, questions were written to be open-ended and nonbiased, and the question sequence progressed from general and unstructured to specific, and from greater to lesser importance (Gamon, 1992; Grudens-Schuck et al., 2004; Krueger, 1993, 1998a, 1998b). Questions were reviewed by an experienced focus group moderator and research analyst and the question route was altered according to her recommendations (N. Grudens-Schuck, personal communication, Nov. 18, 2004). Focus group discussions began with introductions of all participants, including the researcher, followed by an explanation of discussion rules and expectations, including information about voluntary participation and participant confidentiality. The first question was answered by each person in turn before moving on to open dialogue. (The complete question route is available on request from the lead author.)

The focus group sessions were audio taped and the researcher took field notes

during each session as Krueger recommends (1998a). Tapes were transcribed by a professional transcriptionist. Further analysis was done through theme coding and qualitative data charts. All substantive comments were placed in categories according to themes addressing the objectives of the study as focus group analysts suggest (Krueger, 1998a; Litosseliti, 2003). A theme was considered valid when mentioned by two or more focus groups (Nordstrom, Wilson, Kelsey, Maretzki, & Pitts, 2000). One participant from each group reviewed discussion summaries, performing "post-focus group verification," as Krueger suggests (1998a) to check for accuracy. No discrepancies were noted.

Focus group research does have limitations, such as the inability to generalize conclusions to larger populations. In addition, according to Litosseliti (2003), the data collected could possibly be affected by moderator bias or manipulation, false consensus, the inability to distinguish between individual or group opinion, and the difficulty of analysis and interpretation. The researcher addressed these concerns by conducting the sessions without personal bias, probing the participants to determine true consensus and individual or group opinion, and following recommended procedures for analyzing data (Krueger, 1998c; Litosseliti, 2003).

Results

Regarding the objective of identifying agricultural information issues crop producers perceive as significant to their businesses, results of this study showed producers generally perceived timely production and management issues with local import as significant. They also believed the reliability of the information is significant.

Each focus group mentioned weather and market information most frequently, which can be interpreted to mean this type of information carried a high level of importance among the groups. Many producers struggled to pinpoint a specific issue of significance when directly asked about which areas they felt they needed more information. Consensus was not reached on one specific issue in any focus group; however, topics suggested by individual producers were not debated. Some group members mentioned world trade issues, organic farming, or specific problems they were facing in their operations. Among producer comments were the following: "Trade issues… what happened over in China and these other places in the world or Brazil... you know it makes a difference to us," "Since I'm into organics there could be a lot more information out on that subject," and "Well, I think one thing that really concerns a lot of us this year is the down corn." Other comments indicated desire for additional information about "global positioning provided at a low cost for us," and "more information about our new farm program."

General themes summarizing producers' comments about issues they perceive as significant were local issues, timely issues, management issues, issues that address a lack of information, and the reliability of information they receive about issues. Illustrative comments organized by theme are listed in Table 1.

Table 1
Thematic Conceptual Matrix of Issues Farmers Perceive as Significant

Theme	Issue	Illustrative Quotes (selected from all focus group sessions)
Local issue	Lodging corn	"Well I think one thing that really concerns a lot of us this year is the down corn. We still had good yields, but harvesting down corn is pretty dang near aggravating."
	Scale-specific production info	"You can't use information about people using twenty-four row planters and GPS guidance and all that… it needs to be specific to my operation size."
Timely issue	Soybean rust	"The hot topic this year is rust, last year it was aphids."
	Soybean aphids	"Last year… nobody else was really on it until after - even Iowa State told us about it two weeks after it (aphid outbreak) happened."
	Markets and weather info	
Management issue	Yield results	"Yield results because it's the most important decision of the year really."
	Micronutrients	"I'd like to see more on micronutrients like at the sub-levels because the seed companies or someone else will come out with the general stuff, but we got to get down to the nitty-gritty because that's where we... squeak out that extra bushel-and-a-half or save a dollar here and there."
	Markets and weather info	
Issues not currently communicated	Advances in transgenic crops	"I'd like more information on modified crops to see what's coming out and to see who will compete against who. Information in that genetically modified crop area has changed so much in the last ten years, fifteen years I guess. It looks like it is here to stay, so we just need to look at the next step."
	New government farm program	"More information about our new farm program. It seems to be in limbo at the moment, it was voted in but we don't seem to see information about it yet."
	Global positioning systems	"Information on global positioning provided at a low cost for us. Right now in order to get it through a reliable system, we pay out the nose for it."
	Organic production	"Since I'm into organics there could be a lot more information out on that subject. You got to really go and scratch the archives to find out information about the organic production from any standpoint."
	Global trade issues	"Trade issues... what happened over in China and these other places in the world or Brazil... you know it makes a difference to us."
	Positive ag news	"Unless it's negative (ag news) it won't be on TV. Most of it is… bad news - you don't hear good news."
		"Their perception of farmers is insulting to our intelligence - including ads. They make us look like hicks sitting out here with a three-pronged pitchfork."

Based on examples from specific comments, the issues the groups generally perceived as most significant were timely production issues with local implications. The comments about important issues included, "The hot topic this year is rust; last year it was aphids," and "yield results because it's the most important decision of the year really." Focus group participants also said information should be specific to their operations, quick to access, and easy to use. One producer said, "You can't use information about people using twenty-four row planters and GPS (Global Positioning Systems) guidance and all that… it needs to be specific to my operation size."

In addition to commenting on issues of interest, some participants mentioned they felt it important to include funding sources when communicating research results. This issue was spontaneously raised by producers in two of the five focus group sessions. One producer said, "I never question the technology of the research if something comes out of extension at Iowa State… it is what gets published and how it's published that I question. I know the research will be done right, but if the results go back to Dow, they may pick and choose what they want to get out." Other comments included, "I realize a lot of funds come from chemical companies and there wouldn't be much research otherwise, but it's one of those questions in the back of your mind," and "I would feel differently about research funded by the Iowa Department of Agriculture than funded by Bayer." Comments regarding the source of research funding are listed in Table 2.

Table 2
Thematic Conceptual Matrix of Issues Farmers Perceive as Significant

Theme	Issue	Illustrative Quotes (selected from all focus group sessions)
Reliability of information	Source of information or research funding	"I've got to question who is behind the research… if they're throwing money at it can they alter those results or control what gets publicized?"
		"I never question the technology of the research if something comes out of extension at Iowa State… it is what gets published and how it's published that I question. I know the research will be done right, but if the results go back to Dow they may pick and choose what they want to get out."
		"I realize a lot of funds come from chemical companies and there wouldn't be much research otherwise, but it's one of those questions in the back of your mind."
		"Even though Paul (ISU Extension Field Crop Specialist) is covering a larger area he's probably doing a better job (communicating) than he did ten years ago because he's talking to the key people… elevators… seed dealers… and they are filtering it down to the customers."
		"I would feel differently about research funded by the Iowa Department of Ag than funded by Bayer."
		"My (unbiased) info comes from the state university - here that happens to be Iowa State."

These results demonstrated only what these selected Iowa producers felt were significant issues. While the data does provide valuable insights into what some producers consider important issues, these results may not be accurately generalized to the overall Iowa producer population. However, the theoretical concepts can be transferred to other similar situations and groups. Krueger identifies transferability as, "parallel to the positivistic concept of generalizability, except that it is the receiver who decides if the results can be applied to the next situation, rather than the sender or researcher" (1998a, p. 70).

Conclusions

Several conclusions can be drawn from the results of this study: 1) simple needs assessments can be used to identify specific issues about which producers desire more information; 2) producers perceived local issues, timely issues, marketing issues, and management issues as significant; and 3) producers considered the source of research funding important when determining the reliability of research results.

Results agree with previous studies that examined the topics or issues Iowa producers perceive as important. Those studies indicated a strong emphasis on agribusiness management, production decisions, and local, farm-specific issues (Kotile & Martin, 2000; Martin & Omer, 1987; Nelson & Trede, 2004).

These findings reiterate those of Kotile and Martin (2000) in supporting the concept that educators should understand the needs of their clients and design their educational programs accordingly. Another overall theme that surfaced and is consistent with previous literature is that information should be specific to audience needs including operation type, size, and location (Bruening et al., 1992; Kotile & Martin, 2000; Richardson & Mustian, 1994).

A finding apparent in these results, but not reported in other studies, is that producers considered the funding source of research results when they determined the reliability of information.

Recommendations

Specific recommendations for Iowa agricultural extension educators based on the results of this study include selecting program topics according to timeliness as well as the location and operation type of their target audience. New marketing or management recommendations and updates also would be significant topics to include in educational programs. In addition, educators should report the sources of funding when presenting research results so that producers are knowledgeable before making conclusions about information reliability. Based on the results of this study, extension educators are encouraged to periodically conduct their own audience analysis to determine which specific issues are significant to their clientele.

Although this study revealed significant information, future research is needed on a broader scale to assess the communication and educational needs and desires of Iowa producers. In addition to a larger, more formal needs assessment, additional research specifically addressing producers' perceptions of outside research funding would be a valuable addition to the body of literature. In order to allow for generalization, the data could be gathered from a random sample of Iowa producers using a large-scale survey research instrument. The data from this study could serve as a resource for selecting objectives and designing questions for such a large-scale study.

Implications for Agricultural Education

These findings have implications for agricultural extension educators and communicators in that they may use them to design the most appropriate educational programs for Iowa crop producers. They may also consider using focus group methodology to assess needs. Knowing which issues producers perceived as significant allows educators to use their limited resources most efficiently to create extension educational programming that addresses the interests and priorities of their clientele.

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MELEA A. R. LICHT is a Communications Specialist in the College of Agriculture and Life Sciences at Iowa State University, 304 Curtiss Hall, Ames, IA 50011. E-mail: mreicks@iastate.edu.

ROBERT A. MARTIN is a Professor and Chair of the Department of Agricultural Education and Studies at Iowa State University, 201 Curtiss Hall, Ames, IA 50011. E-mail: drmartin@iastate.edu.

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