

Iowa Corn and Soybean Producers' Use of Communication Channels

Melea A. R. Licht and Robert A. Martin

Abstract

The purpose of this study was to determine the agricultural information preferences of corn and soybean producers in Iowa and the implications for agricultural Extension education. The specific objective of this report was to identify how Iowa producers use communication channels to obtain agricultural information. The results will help agricultural Extension educators and communicators make informed decisions regarding program delivery. The study collected data from corn and soybean producers in five focus groups held throughout Iowa. Focus group data were collected as audiotapes and transcriptions. Analysis was performed through theme coding and qualitative data charts. Study findings revealed that a) producers used a variety of communication channels to gather agricultural information, b) producers primarily used radio and consultations for gathering agricultural information, c) producers used mass media channels for general information and interpersonal communication channels for specific and applicable information, and d) producers looked to Extension for assistance in evaluating information gathered from other sources.

So What?

Reaching key audiences can be especially challenging because of increasingly tight budgets and the growing mix of communication options. Research suggests that communicators should use a combination of methods, but in reality we often must prioritize and choose among methods. We often hear, "Put it up on the Web," to save resources, but are audiences really finding the information they need? This study provides a useful snapshot of communication preferences for one specialized audience—Iowa crop producers—in an effort to lend insight others can use when targeting and interacting with similar audiences.

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Crop producers operating in today's technology-driven society are flooded with information from an increasing variety of sources. This barrage of information can be overwhelming both for producers and for those who seek to communicate with them.

Extension educators who communicate in this environment use both interpersonal and mass media communication channels to diffuse and collect information and to deliver programs, report research results, and engage in dialogue with constituents (Rogers, 2003). Using a variety of channels is recommended, since Extension clientele, including corn and soybean producers, utilize various communication methods (Boone & Zenger, 2001; Bruening, Radhakrishna, & Rollins, 1992; Creswell, 1990; Dollisso & Martin, 1999; Kotile & Martin, 2000; Lasley, Padgitt, & Hanson, 2001; Richardson & Mustian, 1994; Rollins, Bruening, & Radhakrishna, 1991; Suvedi, Campo, & Lapinski, 1999; Trede & Whitaker, 1998).

Unfortunately, it is not always economically feasible to use multiple communication channels. When forced to choose among methods, Extension educators and communicators should ideally base their choice of communication channel on audience analysis so they may select the most efficient delivery method (Bouare & Bowen, 1990; Radhakrishna, Nelson, Franklin, & Kessler, 2003; Richardson & Mustian, 1994; Riesenberg & Gor, 1989; Rollins, 1993). However, Riesenberg and Gor (1989) found that most information providers do not follow these recommendations. They reported that in most cases, the sender selects the channel based on his or her personal preference, rather than on audience need.

Purpose

Due to the importance of communication channels in the educational process, especially in Extension, and the increasing number of channels available, there is a need for a greater understanding of how crop producers gather information. Access to this information would enable educators and communicators to select the most efficient delivery methods.

The overall purpose of this study was to determine the agricultural information preferences of corn and soybean producers in Iowa and the implications of these preferences for agricultural Extension education. The objective of the study discussed in this paper was to identify how Iowa corn and soybean producers use communication channels to obtain agricultural information.

The results will be useful to Extension educators and communicators offering programs targeted to crop producers in situations where funding or time does not allow for a detailed audience analysis.

Literature Review

Previous studies of Iowa crop producers showed that they use a variety of methods to gather agricultural information (Creswell, 1990; Kotile & Martin, 2000; Lasley et al., 2001; Trede & Whitaker, 1998). The 2005 Iowa Farm and Rural Life Poll (Korsching, Lasley, & Gruber, 2005) found that Iowa farmers use farm magazines and newsletters for information on innovative farming technologies and do not use the Internet as a primary source of agricultural information. Close to 90% of respondents in that study indicated that, as compared to current practices, farm media news releases and on-farm demonstrations should be given equal or greater emphasis when delivering information to farmers (Korsching et al., 2005). Research has shown Iowa producers use consultations most often, and as a group use interpersonal communication most frequently (Gamon, Bounaga, & Miller, 1992; Lasley et al., 2001; Petrzela, Padgitt, & Wintersteen, 1999). Research involving producers throughout the country showed similar results (Bouare & Bowen, 1990; Brashear, Hollis, & Wheeler, 2000; Richardson & Mustian, 1994; Suvedi, Lapinski, & Campo, 2000). In addition, many studies found that producers use the Internet as a supplemental source of information (Brashear et al., 2000; Lasley et al., 2001; Radhakrishna et al., 2003; Suvedi et al., 1999; Vergot, Israel, & Mayo, 2005).

Methods

The focus group method of qualitative data collection was selected for this study because it is particularly suited for gathering information about people's feelings, thoughts, beliefs, and behaviors (Larson, Grudens-Schuck, & Allen, 2004; Morgan, 1998a). 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, nonthreatening environment (Litosseliti, 2003; Morgan, 1998a; Morgan & Krueger, 1993). Focus groups are often used in program planning and community development, including Extension work (Larson et al., 2004). They also provide a much-needed venue for feedback, especially between groups with varying degrees of power, such as participants and decision-makers or, as is the case in this study, corn and soybean producers and academics (Morgan & Krueger, 1993).

Ensuring that a focus group is made up of participants with similar characteristics enhances the quality of the data, since people tend to disclose more to those they perceive as similar to themselves (Grudens-Schuck, Allen, & Larson, 2004; Litosseliti, 2003). To attain this goal, the researchers selected participants based on recommendations from Iowa State University Extension field crop specialists. The specialists were asked to provide a

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purposive sample of producers who were users of agricultural information, who would actively participate in the study, and who were engaged in similar farming operations since, according to the American Marketing Association, that type of sample would best serve the research purpose (2007). Focus group participants were Caucasian males whose ages ranged from late twenties to early sixties and who raised corn and soybeans. Research has shown the “average” Iowa crop producer to be a Caucasian male, age 54, with a farm operation of 564 acres and a net farm income of \$49,041 (Smith & Edwards, 2006; USDA National Agricultural Statistics Service, 2002). In total, 115 producers were recommended for the study and contacted by the researcher to determine their interest in participating.

The study consisted of five focus groups involving 3 to 9 producers in each group. Focus groups were held in five communities throughout Iowa (one located in each region of the state) during December 2004. In total, 29 producers participated in the study. These procedures align with recommendations by Krueger and Morgan (1993) regarding focus group size and number of sessions.

Only the participants and the researcher were present during each discussion. The researcher served as both moderator and recorder. Focus group sessions were limited to 90 minutes, since focus group experts recommend discussion last no longer than 2 hours (Grudens-Schuck et al., 2004; Morgan, 1998b). Participants were provided a meal and gift (a coffee mug) for their participation.

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 altered according to her recommendations (N. Grudens-Schuck, personal communication, November 18, 2004). Focus group discussions began with introductions, which were followed by an explanation of discussion rules and expectations, including information about voluntary participation and confidentiality. Participants were able to self-define communication channel terms according to their popular usage, so discussion was not limited to terms introduced by the moderator. The researcher coded similar communication channels together from across all focus groups to form conclusions. (The complete question route is available upon request from the lead author.)

Focus group data consisted of transcriptions of audio tapes and moderator notes, as recommended by Krueger (1998a). Following published

focus group procedures, the researchers analyzed data through theme coding and qualitative data charts, rather than quantitative methods (Grudens-Schuck et al., 2004; 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 to ensure accuracy, as Krueger suggests (1998a). No discrepancies were noted.

Results

The objective of the study was to identify Iowa producers’ current use of communication channels to obtain agricultural information. The producers in this study were found to use radio programs and consultations most frequently for all types of information. Producers used mass media communication methods more often, but considered information gathered through interpersonal methods to be more reliable. Specific quotes from producers illustrating these and other results are provided in Table 1.

Table 1. *Farmers’ Use of Communication Methods*

Use	Themes	Illustrative quotes (selected from all focus group sessions)
Radio	Daily use	“The radio is what I rely on most. I listen every day to get all the information. If that was gone, I’d be lost.”
	Easy to use	“Radio is quicker...you can listen while you’re still working.”
	Low time commitment	“I use radio the most during the busy season.”
	Timely	“The number one for me would be radio.”
	Use most frequently	“If it’s really busy I listen to radio all the time—it’s the top thing if you’re on the go.”
	Use dependent on season	“I started using a headset for the radio in the hog barn. It keeps the noise down and I can listen to the news...that’s a major source of where I hear my day-to-day stuff.”
	Use while working	

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Consultations	Frequent use, weekly	"I get information from people because of the relationship we have."
	Most reliable	"If you really have a question, Extension is where to go."
	Timely	"It's a lot faster to go get the consultation."
	Filters information from other methods	"Consultation is more than 90% believable." "You get a lot of information every Sunday morning after church. You sit and visit with your friends."
	Use both farmer and expert consultations	"I can't emphasize consultation enough—with a brother in agronomy, I call him all the time."
	Use to solve problems	"You go to someone like John [Extension]—you know, someone local—and ask how it might be applied to your area. They know the area."
TV	Infrequent use	"Like everybody else, I'd say I get zero from TV."
	Not a primary source of ag info	"When I do watch TV, I change the channel whenever a chemical commercial comes on...most of them make farmers look like a bunch of idiots, in my opinion." "TV would get the lowest rating—you don't ever use it."
Newspapers	Farm newspapers used weekly	"If we lost radio, then let's face it, we're not going to depend on the newspapers to get our information, because that's just too slow."
	Considered insufficiently timely	"There just aren't enough farmers to make ag a priority for them [daily newspapers]."

Daily/local papers not a good source of ag info

"I've usually heard something about it [the ag news] on the radio before, but sometimes there's some more detailed information in there [newspaper]."

"The Des Moines paper is almost like anti-agriculture—the yuppie paper. There used to be a lot of agricultural stuff in the Sunday paper, but there isn't much now."

Magazines

Monthly use

"There's a lot of information in there that they don't have time on the radio to cover, and a lot more information than in a newsletter."

Good for detailed information

"It depends on what time of year it is if you read them. You may save them up for a rainy day."

Do not read immediately

"I try to read them, but it seems like they all come at once and they end up in a pile, and quite often the information is old by the time you get to reading it."

Considered insufficiently timely

"I'd be more apt to throw a magazine in the pick-up and take with me if I'm hauling grain or running the grain cart or something."

"A magazine is usually too late by the time you get it."

"If I need more information on a subject that I heard about on the radio, I go to magazines."

Data Transmission Network (DTN) Use varies

"I can get 99% of what's on the DTN on the Internet now."

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Many use Internet to access DTN info

"I keep it because of the speed... I've got high speed [Internet], too... it doesn't take that long, but yet I can just press a button [on DTN] and it's there."

"It's the same thing year after year on the screen [with DTN], where on the computer maybe somebody changes their Web page...it might be different and then you have to readjust yourself to what you're looking at."

"I use the DTN a lot, but I'll probably get rid of it since we just got new Internet...all that information is available on the Internet."

Internet

Use varies, but ranges from daily to weekly for many

"Internet is the next best source. You get research info a lot quicker and a wider range of information from farther away. I check many of the university ag sites."

Some avoid it completely

"I don't use the Internet, because it's so slow at my house I get sick of waiting for it to load up."

Described as time-consuming

"The e-mail newsletters are quick and easy and you can unsubscribe if you don't want them anymore."

Users referred to sites by other media

"My e-mail use kind of goes with consultation...guys will send me a link to keep an eye out for this from Extension, or the local agronomist, or it's mentioned on the radio."

"When I use it I'm not on there surfing looking for ag information. I mean, it's markets and weather."

	<p>Many do not use search engines</p>	<p>"If I got a question or if I get confused on an answer I'm given... I can get specific answers online."</p>
	<p>Primarily use for e-mail</p>	<p>"I get on the Pioneer Growing Point Web site every morning. There's a lot of information there—markets, weather, commentary. That's my number one source at the moment."</p> <p>"I don't use the Internet a lot for ag information."</p> <p>"You don't have time to go and play around with the computer to see what's going on."</p> <p>"I can run it, but I'd just as soon take a hammer and throw it through the screen...basically there's stuff on it if you have the time to sit there."</p>
<p>Newsletters</p>	<p>Use varies</p> <p>Perceived as supplemental information</p>	<p>"I'm a CCA, too, so we get a lot of information that way... newsletters from Iowa State and seed companies."</p> <p>"If you're looking for a certain bug, I can take a leaflet from the agronomist out in the field and say this is what I got, but I can't do that with the Internet."</p> <p>"A lot of the information is university research... maybe it comes out of Purdue, Illinois, or Iowa State, but they [agribusinesses] pass it off as their own."</p> <p>"I don't really rely on information from newsletters—it's just interesting to know."</p>

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Meetings	Occasional (two or three per year)	"I go to any of the Extension meetings within driving distance that work in my schedule. They're a big help and a good method of presentation and good information."
	Timely	"The information is at too basic a level for me. I stopped going because I wanted a little more sophisticated information. But I love the Crop Advantage meetings."
	Time-consuming	"I like to go to meetings, but if my time schedule doesn't allow it I just don't make them." "It depends on the person, rather than the meeting or style." "You come to a lot of meetings and everybody's going to talk in generalizations. I'm not interested in generalizations. I want site-specific for what my problem is at my place...but when you're sitting there with twenty people, they've got twenty different problems."

Demonstrations	Occasional (two or three per year)	"I don't like to go to demonstrations. I just don't have the time, and I get my social time other places."
	Time-consuming	"The time element is the biggest reason I don't attend." "I go to them for iron, machinery, different things like the application of equipment." "You're not going to see some of that stuff on paper...plowing, ripping, new tillage."

"If something's wrong, I want to see what's going on."

"Now that you can get on the Internet to see what they're selling, there's no reason to go."

"The people make the difference; sometimes they're just plain boring."

Workshops	Once a year	"We go down to Iowa State to the field education house. We have training down there, so that's probably my biggest source."
	Time-consuming	"I did go to a Farm Bureau marketing workshop that was really good...people tend to shy away from having to work on something that's not job-related." "If it's a workshop, you usually got to spend all day there." "I usually learn more from a workshop."

Two Clear Leaders: Radio and Consultations

Each focus group reached the consensus that radio was the most frequently used communication channel. Almost every participant used radio to receive agricultural information daily. They used radio to gather agricultural information about local weather, markets, and world news, and for commentary. Every focus group also agreed that the use of radio was especially frequent during planting and harvesting seasons, when producers spend many hours in farm vehicles. They used radio regularly because they believed it to be a timely source of agricultural information that is easy to use and can be listened to while performing other tasks, such as driving and feeding livestock. Many listed the same specific programs or stations and planned their daily activities around these programs.

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Consultation was the second most frequently used communication channel; talking with other people, either in person or over the phone, ranked second highest in every focus group. Producers believed consultation to be the quickest, most direct method for obtaining local operation-specific agricultural information. They placed high value on consultations with other producers, neighbors, and friends, as well as consultations with company representatives, local agronomists, and Extension educators. Producers listed this as their most reliable source of information. They used consultations, especially with Extension, as a way to sort through information gathered by other methods and to determine what specifically applied to their farming operations.

In Last Place: Television

While radio and consultations were the two most commonly used channels in all focus groups, there was no clear consensus regarding other channels, except when it came to the least used channel—television. In every focus group, television was identified as the channel used least for receiving agricultural information. Producers felt there were few agricultural programs offered and that the agricultural reporting on television was negative or biased against agriculture. Several voiced displeasure with the portrayal of producers in the television media, including advertisements. While this channel was used the least, a few programs, such as *Market to Market* and *Ag Day*, were mentioned in every focus group. Producers also mentioned receiving information from local agriculture programs offered by private consultants or companies, such as *The Hefty Brothers* and *Ag Ph.D.*

A Variety of Methods for a Variety of Agricultural Information

Producers spoke highly of weekly farm newspapers, and many said they read them each week for general agriculture news and current events. However, they were very negative toward daily newspapers, and several specifically criticized the *Des Moines Register* for its lack of unbiased agricultural news. A few Internet-savvy producers felt the weekly newspapers were not timely enough compared to the Internet, but this was not a consensus reached in any group.

Producers agreed that they used magazines as a source of agricultural information. While they received magazines monthly, producers said they often did not read them on a monthly basis, but rather saved the magazines until they had more time to devote to reading. This use pattern, in addition to the monthly or quarterly publication schedule of magazines, led producers to describe them as an insufficiently timely source of information. Producers reported that they used magazines for gathering in-depth production

information, equipment information, and research study results. Producers also used magazines for their advertising sections, pictures, and graphs. If a story was of particular interest to them, many producers reported keeping the magazine for later use. Some indicated that they took issues with them to read during breaks while harvesting. All producers in the study received magazines, but many reported they did not actively subscribe.

Data Transmission Network (DTN) machines or content were used by almost all producers in the study, but to varying degrees. DTN machines receive direct data transmission via satellite. Producers primarily used the DTN for local market and weather information. Those who used DTN machines reported that they used them because they like the familiar and consistent interface, because they are accessible when the family computer or phone line is busy, and because they are quicker than accessing information over the Internet. Those who did not use the individual DTN satellite systems said that they still get information from the DTN over the Internet or at local businesses that have the machines. Producers used the DTN more frequently than they used the Internet alone.

Supplemental Communication Channels: Internet and Newsletters

Consensus was not reached in any focus group regarding use of the Internet. Use varied greatly within groups, with some producers going online daily and others never using the Internet at all. The producers who used the Internet accessed it for weather, crop reports, markets, commentary, production, product comparisons, and especially e-mail. Several producers mentioned receiving agricultural e-mail newsletters from companies and organizations. Many producers said they do not search for information, but rather go directly to Web sites they have learned about from other sources, such as consultations or magazines. Some said they used the Internet because the information is available when it is convenient for them. The producers who said they do not use the Internet listed many reasons for their lack of use, including slow computer connections and the time required to gather information.

Many producers received newsletters, but did not mention them as a channel they used frequently to obtain agricultural information. Rather, they saw them as a supplemental method for learning about timely, local production issues, management recommendations, product and equipment information, and research results. Producers received newsletters from private companies, consultants, or public organizations, such as Iowa State University. The *Integrated Crop Management* newsletter from Iowa State University was mentioned frequently by producers as a regular source of information they often kept for future reference. They also mentioned

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that they picked up newsletters and publications from the local Extension office when they were interested in a particular topic and wanted more basic information. They did not object to paying a nominal fee for these publications or for newsletters from public organizations.

Interpersonal Communication Methods: A Matter of Time

Producers indicated they attended meetings approximately two to three times per year. They attended meetings, such as those hosted by local Extension offices, to gather general information on topics that applied to their local area. Producers often chose to attend meetings based on the quality of the speaker or their relationship with the speaker. Some said they did not use meetings because they desired more detailed information or because they believe them to be too time-consuming.

Although many producers indicated that they learn more at workshops than at meetings, they attended workshops only occasionally, as infrequently as once a year. They said few workshops were offered for producers, and that they involved a considerable time commitment. The workshops they did attend were offered mostly by producer associations. At these workshops, producers obtain marketing information and details about special production programs, such as Quality Beef Assurance, offered by the National Cattlemen's Association.

Many producers attended demonstrations, especially at farm shows, but did not list them as a primary way to receive agricultural information. Producers predominantly used this method to gather comparative information when selecting products, such as equipment or seed. They also used demonstrations to make decisions about management issues or to find solutions to production problems. They chose to attend demonstrations based on the reputed ability of the presenters, the proximity, and the timeliness and applicability of the information presented. Some also indicated that producers might attend for the social aspect, including meals. No one expressed misgivings about the time or day demonstrations were offered.

Information: A Return on Investment

Producers said they did consider cost when choosing among methods. They selected methods based on the amount of information they receive in return for their investment of money and time.

Interpersonal Versus Mass Media

Producers used mass media communication channels more often, but considered information gathered through interpersonal channels to be more reliable. They used mass media methods for general agricultural information

and news, and then used interpersonal communication methods to gain greater understanding of that information. Producers used interpersonal communication, especially with Extension, as a way to filter out information that did not apply to them and to obtain specific information for their farm type and location.

Transferability

Although these results summarized the communication channels used by selected Iowa producers only, the data provide valuable insight about how producers use communication channels. It may not be possible to generalize these results to apply to the overall Iowa crop producer population. However, the theoretical concepts can be transferred to 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

The results of this study indicate that producers use a variety of communication channels to gather agricultural information and that radio and consultations are most popular for gathering agricultural information. Particularly, producers use mass media channels for general information and interpersonal communication channels for specific and applicable information. In addition, producers look to Extension personnel for assistance in evaluating information gathered from other sources.

The results support previous literature showing that the best way to communicate with producers is through a variety of communication channels (Boone & Zenger, 2001; Bruening et al., 1992; Creswell, 1990; Dollisso & Martin, 1999; Kotile & Martin, 2000; Lasley et al., 2001; Richardson & Mustian, 1994; Rollins et al., 1991; Suvedi et al., 1999; Trede & Whitaker, 1998). Extension educators and communicators should target the use of communication methods discussed in this study according to how producers use each method (Bouare & Bowen, 1990; Radhakrishna et al., 2003; Richardson & Mustian, 1994; Rollins, 1993).

The specific results showing that the communication channels used most were radio and consultations were consistent with previous studies by Martin and Omer (1990) and Bouare and Bowen (1990), both of which found radio to be a primary method of communication between Extension educators and their audiences. Several previous studies also demonstrated the use and significance of consultations (Bouare & Bowen, 1990; Gamon et al., 1992; Nelson & Trede, 2004; Petrzela et al., 1999).

Discussion

Based on producers' stated use of communication channels, it appears that a variety of channels should be used to deliver educational information. This study suggests that the following recommendations be considered when delivering agricultural information to Iowa corn and soybean producers.

Agricultural Extension educators and communicators should use radio and consultations as their primary means of communicating with producers. Radio is especially useful for distributing information that needs to reach producers in a timely manner or that needs to be distributed during planting or harvesting seasons. To communicate information through consultations, Extension educators could use tools such as fact sheets, internal newsletters, and in-service or Web training to equip those consulting with farmers with accurate and concise talking points and references. Educators and communicators also should engage intermediary audiences who provide consultations to producers, such as private crop consultants or agribusiness sales representatives, to deliver their messages.

Other specific recommendations include using magazines to communicate detailed information that is not dependent on time of delivery, and farm newspapers for information that is useful within a weekly timeframe. Also, the Internet should be used as a supplemental information source, and producers should be directed to specific Web sites through other media. Based on these findings, Extension educators and communicators should consider de-emphasizing efforts focused on television and daily newspapers when attempting to reach audiences similar to that in this study.

In terms of interpersonal methods, Extension educators should use consultations, meetings, and demonstrations to provide producers with a local perspective on agricultural issues. Demonstrations should especially be used to compare production practices or demonstrate solutions to current, local problems. Extension educators should offer meetings and demonstrations close to their target audience and feature skilled presenters with whom the audience is familiar. Based on this study, workshops should be reserved for complex, specific information requiring a high level of learner interaction.

In addition to these specific recommendations, these results are significant to agricultural education and communication in that they reveal an emerging role for agricultural Extension educators: that of information filters for producers. Since producers consider interpersonal communication

channels more reliable, even though they use mass media more often, Extension educators may have the opportunity to influence producers more significantly than mass media. This role is becoming increasingly important as producers receive an increasing amount of information through a growing variety of methods. Extension educators should expand this information-filtering role to assist producers in gaining a better understanding of agriculture information presented in the media. Communicators should work with Extension educators to incorporate their messages into the information-filtering process. This could be achieved through the use of fact sheets, internal newsletters, and in-service or Web training to share planned messages and information with Extension staff in order to present consistent, accurate information.

Future research is needed on a broader scale to assess the communication channel use of Iowa corn and soybean producers. To allow for generalization, the data could be gathered from a random sample of Iowa producers using large-scale survey research methods. The data from the current study could help identify objectives and design questions for such a study.

About the Authors

Melea A.R. Licht is a communications specialist in the College of Agriculture and Life Sciences at Iowa State University. Robert A. Martin is a professor and chair of the Department of Agricultural Education and Studies at Iowa State University. This article is a product of the Iowa Agriculture and Home Economics Experiment Station, Ames, Iowa, Project #3613, and was sponsored by Hatch Act and State of Iowa funds.

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References

- American Marketing Association. (n.d.). *Dictionary of marketing terms*. Retrieved May 9, 2007, from <http://www.marketingpower.com/mg-dictionary.php>
- Boone, K. M., & Zenger, S. (2001). Preferred communication channels of homemakers. *Journal of Applied Communications, 85*(4), 19-35.
- Bouare, D., & Bowen, B. E. (1990). Formal and nonformal instruction delivered to producers by adult instructors, secondary agriculture teachers, and Extension agents. *Journal of Agricultural Education, 31*, 68-73.

Research

- Brashear, G. L., Hollis, G., & Wheeler, M. B. (2000, February). Information transfer in the Illinois swine industry: How producers are informed of new technologies. *Journal of Extension*, 38(1). Retrieved May 10, 2005, from <http://www.joe.org/joe/2000february/rb4.html>
- Bruening, T., Radhakrishna, R., & Rollins, T. (1992). Environmental issues: Producers' perceptions about usefulness of information and organizational sources. *Journal of Agricultural Education*, 31, 34-42.
- Creswell, J. (1990). *An identification and assessment of Extension educational delivery systems for training of private pesticide applicators*. Ames: Iowa State University.
- Dollisso, A. D., & Martin, R. A. (1999). Perceptions regarding adult learners' motivation to participate in educational programs. *Journal of Agricultural Education*, 40(4), 38-46.
- Gamon, J. (1992, Spring). Focus groups—A needs assessment tool. *Journal of Extension*, 30(1). Retrieved November 11, 2004, from <http://www.joe.org/joe/1992spring/tt2.html>
- Gamon, J., Bounaga, L., & Miller, W. W. (1992). Identifying informational sources and educational methods for soil conservation information used by landowners of highly erodible fields. *Journal of Applied Communications*, 76(1), 1-5.
- Grudens-Schuck, N., Allen, B. L., & Larson, K. (2004). *Focus group fundamentals*. [Extension Publication PM 1969b]. Ames: Iowa State University.
- Korsching, P., Lasley, P., & Gruber, T. (2005). *ISU Extension farm and rural life poll*. [Extension Publication PM 2012]. Ames: Iowa State University.
- Kotile, D. G., & Martin, R. A. (2000). Sustainable agricultural practices for weed management: Implications to agricultural Extension education. *Journal of Sustainable Agriculture*, 16(2), 31-51.
- Krueger, R. A. (1993). Quality control in focus group research. In D. L. Morgan (Ed.), *Successful focus groups: Advancing the state of the art* (pp. 5-20). Newbury Park, CA: Sage Publications.
- Krueger, R. A. (1998a). *Analyzing and reporting focus group results* (Vol. 6). Thousand Oaks, CA: Sage Publications.
- Krueger, R. A. (1998b). *Developing questions for focus groups* (Vol. 3). Thousand Oaks, CA: Sage Publications.

- Larson, K., Grudens-Schuck, N., & Allen, B. L. (2004). *Can you call it a focus group?* [Extension Publication PM 1969a]. Ames: Iowa State University.
- Lasley, P., Padgitt, S., & Hanson, M. (2001). Telecommunication technology and its implications for producers and Extension services. *Technology in Society, 23*, 109-120.
- Litosseliti, L. (2003). *Using focus groups in research*. London: Continuum.
- Martin, R. A., & Omer, M. H. (1990). Perceptions regarding instructional methods used in adult agricultural education programs. *Journal of Agricultural Education, 31*, 2-6.
- Morgan, D. L. (1998a). *The focus group guidebook* (Vol. 1). Thousand Oaks, CA: Sage Publications.
- Morgan, D. L. (1998b). *Planning focus groups* (Vol. 2). Thousand Oaks, CA: Sage Publications.
- Morgan, D. L., & Krueger, R. A. (1993). When to use focus groups and why. In D. L. Morgan (Ed.), *Successful focus groups: Advancing the state of the art*. Newbury Park, CA: Sage Publications.
- Nelson, D. R., & Trede, L. D. (2004, February). Educational needs of beginning farmers as perceived by Iowa Extension professional staff. *Journal of Extension, 42*(1). Retrieved November 2, 2004, from <http://www.joe.org/joe/2004february/rb2.shtml>
- Nordstrom, P. A., Wilson, L. L., Kelsey, T. W., Marezki, A. N., & Pitts, C. W. (2000, October). The use of focus group interviews to evaluate agriculture educational materials for students, teachers, and consumers. *Journal of Extension, 38*(5). Retrieved November 2, 2004, from: <http://www.joe.org/joe/2000october/rb2.html>
- Petzelka, P., Padgitt, S., & Wintersteen, W. (1999, December). Extension's portfolio for the 21st century: A place for one-on-one consultations. *Journal of Extension, 37*(6). Retrieved May 10, 2005, from <http://www.joe.org/joe/1999december/comm1.html>
- Radhakrishna, R., Nelson, L., Franklin, R., & Kessler, G. (2003, August). Information sources and Extension delivery methods used by private longleaf pine landowners. *Journal of Extension, 41*(4). Retrieved June 9, 2004, from <http://www.joe.org/joe/2003august/rb3.shtml>
- Richardson, J. G., & Mustian, R. D. (1994). Delivery methods preferred by targeted Extension clientele for receiving specific information. *Journal of Applied Communications, 78*(1), 22-32.

Research

- Riesenberg, L. E., & Gor, C. O. (1989). Producers' preferences for methods of receiving information on new or innovative farming practices. *Journal of Agricultural Education*, 30, 7-13.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
- Rollins, T. (1993). Using the innovation adoption diffusion model to target educational programming. *Journal of Agricultural Education*, 34, 46-54.
- Rollins, T., Bruening, T., & Radhakrishna, R. (1991). Identifying Extension information delivery methods for environmental issues. *Journal of Applied Communications*, 75(2), 1-9.
- Smith, D., & Edwards, W. (2006). *2005 Iowa farm costs and returns*. [Extension Publication FM-1789]. Ames: Iowa State University.
- Suvedi, M., Campo, S., & Lapinski, M. K. (1999). Trends in Michigan producers' information-seeking behaviors and perspectives on the delivery of information. *Journal of Applied Communications*, 83(3), 33-50.
- Suvedi, M., Lapinski, M. K., & Campo, S. (2000, February). Farmers' perspectives of Michigan State University Extension: Trends and lessons from 1996 and 1999. *Journal of Extension*, 38(1). Retrieved May 10, 2005, from <http://www.joe.org/joe/2000february/a4.html>
- Trede, L. D., & Whitaker, S. (1998). Perceptions of Iowa beginning producers toward the delivery of education. *Journal of Applied Communications*, 82(4), 22-33.
- USDA National Agricultural Statistics Service. (2002). *The census of agriculture*. Retrieved April 10, 2007, from http://www.nass.usda.gov/Census_of_Agriculture/index.asp
- Vergot P., III., Israel, G., & Mayo, D. E. (2005, April). Sources and channels of information used by beef cattle producers in 12 counties of the northwest Florida Extension district. *Journal of Extension*, 43(2). Retrieved May 10, 2005, from <http://www.joe.org/joe/2005april/rb6.shtml>