# Media Relations Skills and Training Needs of Southern Agricultural Scientists

**Lisa Lundy**
Graduate Student
University of Florida
lklundy@mail.ifas.ufl.edu

**Ricky Telg**
Associate Professor
University of Florida
rtelg@mail.ifas.ufl.edu

**Tracy Irani**
Assistant Professor
University of Florida
irani@ufl.edu

**Deanna Locke**
Graduate Student
University of Florida
hogswild@aol.com

Department of Agricultural Education & Communication
P.O. Box 110540
University of Florida
Gainesville, FL 32611-0540
(352) 392-0502
FAX: (352) 392-9585

**Media Relations Skills and Training Needs of Southern Agricultural Scientists**


## Abstract

This study examined the media relations skills and media training needs of Southern agricultural scientists. A stratified random sample of 300 Southern Association of Agricultural Scientists was drawn from the association's online member directory. Sixty-two agricultural scientists responded to the online, Web-based survey, for a response rate of 20.6%. Respondents were more representative of the physical and biological sciences than the social sciences and were predominantly male. Most respondents had been interviewed by a reporter at least once during the previous year and had positive experiences in the interview process. Respondents were confident in their media relations capabilities. Approximately two-thirds had taken some type of media relations training and were positive about what they had learned. Respondents also would be likely to take media relations training, even on topics which they had taken training in previously. Areas in which respondents said they would be most likely to take training were communicating effectively in crisis situations and writing newspaper columns. The media relations training that respondents had undertaken was seen as valuable; SAAS members said the training was beneficial, satisfying, and positive. This finding indicates that current media relations training efforts at universities or agriculture-related institutions are making a direct and positive impact on agricultural scientists, and that scientists are using what they have learned.

**Media Relations Skills and Training Needs of Southern Agricultural Scientists**

## Introduction

The news media play a critical role as one of the primary means through which scientific and health-related issues are brought to the attention of the general public (Malone, Boyd, & Bero, 2000). The reality of science for most people is what they experience through mass media channels (Nelkin, 1995). Good reporting allows people to evaluate science policy issues and make rational personal choices; poor reporting can mislead a public that is increasingly affected by science (Nelkin, 1995). Significant developments in science and technology, major treatments of diseases, and developments with practical applications for medicine and agriculture attract journalistic attention (EFB Task Group on Public Perceptions of Biotechnology, 1996).

Because of this diffusion of science information through the news media, media researchers and practitioners have stressed the need for the science and journalism disciplines to collaborate through media relations training (Gascoigne & Metcalfe, 1997; Metcalfe & Gascoigne, 1997). Metcalfe and Gascoigne (1997) conducted two-day media skills workshops for scientists in Australia for nine straight years. Prior to the workshops, an assessment indicated that participants believed journalists generalized their stories, were not hard-working individuals, and viewed scientists negatively. The studies of 178 Australian scientists showed that after participating in the workshops, most scientists believed journalists were helpful, reliable, accurate, trustworthy, interested, and hard-working.

In a study of scientists and journalists (Reed, 2001) results indicated that scientists and journalists believe education about the media was seen as more relevant for scientists

than education about science for journalists, because science contains complex and difficult-to-understand issues. According to Reed and Walker (2002), many journalists opt out of studying science in school, so when they are assigned to science stories, they are unlikely to welcome science education. Nelkin (1995) stated that many journalists agree on the need for greater technical education when it comes to science, but some journalists argue that too much science education can be costly to the reporter; if journalists know too much about a technical subject, their writing may become overspecialized and difficult for the public to understand. Reed's study (2001) also showed that media-aware scientists were seen as potential trainers for other scientists about the media.

Hartz and Chappell (1997) reported that journalists complained about scientists being intellectual, immersed in their own jargon, and failing to explain their work simply, whether to reporters or the public. Reporters also said scientists needed to communicate about an issue that is relevant to the reader or viewer because science research is often complex. Results also indicated that journalists have a great deal of confidence in scientists. About 80% of journalist respondents found scientists somewhat accessible, but 7% found them not accessible at all (Hartz & Chappell, 1997).

The issue of media relations training – skills on how to work with, be interviewed by, and contribute to the news media – for scientists is one with which the scientific community continues to wrestle. Scientists hold high standards for themselves, when it comes to peer review, and focus most of their efforts on peer communication; this leads to a lack of communication skills with journalists (Nelkin, 1995). F. Sherwood Rowland, 1993 president of the American Association for the Advancement of Science, attributed

the most serious problems among scientists and journalists to a lack of communication (Nelkin, 1995).

Results from Gascoigne and Metcalfe's study (1997) indicated the following: scientists with little or no media relations training are more suspicious of the media; media relations skills are valued by those who have undertaken media relations training; and scientists realized increased research funding, better corporate image, and higher public accountability as benefits of working with the media. Scientists also regarded their lack of time as a major obstacle to working with the media. Hartz and Chappell (1997) found that scientists who are inexperienced in media training are fearful of misrepresentation and inaccuracy. They see the media as exploitive, manipulative, and sensationalistic in their reporting of scientific findings.

In many instances, research universities, private research organizations, government organizations, pharmaceutical companies, non-profit health associations, and public relations firms hire science public relations specialists, trained in both science and journalism, to accomplish the goal of public visibility and mass media interest (Duke, 2002). They cover issues such as medicine and health care, energy, technological developments, and environmental issues (Duke). Several science-related organizations routinely collaborate with public relations professionals and journalists to get reporters interested in their goals (Nelkin, 1995).

One subset of the scientific community is agricultural science. However, even though agriculture is important to America's economic, environmental, and cultural growth, agricultural news is surprisingly a neglected topic in the mass media (Stringer & Thomson, 1999). An exception to this lack of coverage of agricultural topics is

agricultural biotechnology. Since the introduction of foods derived from bioengineered crops, agricultural biotechnology has been an intense subject of scientific and public debate (Hallman & Metcalfe, 1995). Hoban (1998), in a study on consumer attitudes about agricultural biotechnology, found that consumers get most of their information about biotechnology primarily from the mass media.

In November 2000, Hagins, Lockaby, Akers, and Lance (2002) conducted a content analysis of Associated Press wire service stories that included agricultural stories in order to determine the number and size of agricultural stories and to assess the agricultural literacy of reporters. Between 1997 and 2000, there was a 22% increase in the number of agricultural stories on the Associated Press newswire. Researchers also found that the majority of sentences in the agriculture news stories were not attributed to a source. Based on their findings, the researchers recommended that those within the agricultural industry should have media training programs to teach them how to talk to and work with the news media. The researchers stated if agricultural professionals learn to work with the news media, reporters would have more access to knowledgeable sources in the agricultural industry so that factual and verifiable agricultural information can be disseminated through the media (Hagins, et al, 2002).

Given the importance of providing information to the public through the news media and the lack of overall agricultural topics in the news, the question of whether agricultural scientists believe they have been adequately prepared and/or possess the necessary media relations skills to work with the news media, must be raised. Therefore, the purpose of this study was to determine the need for specific media relations training among scientists working in agriculturally related disciplines. Objectives of the study

were to assess perceptions of a sample of agricultural scientists located in the southern region of the U.S. as to (1) their media relations interview and training experiences; (2) their confidence in their ability to communicate with news media, and (3) specific media relations training needs. By identifying the media relations training needs of agricultural scientists, training experts will be able to develop materials to better equip these scientists with the skills needed to communicate effectively about their discipline with the news media.

## Methodology

The target population for this study was the membership of the Southern Association of Agricultural Scientists (SAAS). SAAS members are agricultural leaders in education and industry who promote the interests of Southern agriculture (Southern Association of Agricultural Scientists, 2002). SAAS is comprised of a diverse group of academics and professionals in the agricultural sector of 13 Southern states.

To conduct the study, a stratified random sample (n=300) of SAAS members was drawn from the association's online member directory. In order to stratify the sample, the entire SAAS membership directory was first grouped according to scientific discipline (agricultural communications, agricultural economics, agricultural education, agronomy, animal science, biochemistry, horticulture, plant pathology, rural sociology, and soil and water conservation). Only members with complete directory information (name, discipline, and e-mail address) were accessed. Every third member from each discipline was selected to randomize the sample.

The study utilized a 17-item, researcher-developed survey instrument that was descriptive in nature. The instrument included sections on scientists' perceptions of news

media, their experiences with being interviewed by news media, their level of confidence/need for training in working with the media, and demographics. All items, with the exception of demographics, utilized five-point Likert-type scales for each response stem.

To assure face and content validity, a panel of experts, comprised of media relations experts reviewed the survey; it was subsequently revised to reflect panel members' suggestions. The resulting instrument was then pilot tested with a subsample (n=17) of SAAS members who were not included in the final study. The results of the pilot study were used to further refine the instrument for delivery to the sample for the actual study.

The survey was developed as an online, Web-based survey, using form development and data collection procedures as outlined by Dillman (1999). To initiate the survey, respondents first received an email cover letter informing them about the Web-based survey and providing them with a respondent code to keep track of respondents and non-respondents. After the initial posting of the Web-based survey, two weeks were given for respondents to return the survey. A follow-up reminder was then sent to nonrespondents. A third and final reminder was sent one month later. Survey response date was utilized to assess reliability of the instrument, resulting in a Chronbach's alpha for the overall scale of .86.

## Results

Of the 300 SAAS members surveyed, 62 agricultural scientists responded, for a response rate of 20.6%. Eight-five percent (n=53) of respondents were male and 15% (n=9) were female. The majority of respondents had been employed in a university

setting for several years; slightly more than half were at the associate professor (20%; n= 12) or full professor (31%, n =19) levels. However, 28% (n=17) said their job title fell in the "other" category, with most stating their titles were "government scientist" and "Experiment Station director or superintendent." Just over 88% (n=54) of respondents currently were employed at a university. Table 1 shows the number and percentage of respondents by discipline.

Table 1

***Respondents According to Academic Discipline***

| Academic Discipline | *N* | Percent |
|---|---|---|
| Agricultural Communications | 0 | 0 |
| Agricultural Economics | 13 | 21 |
| Agricultural Education | 1 | 2 |
| Agronomy | 11 | 17 |
| Animal Science | 13 | 21 |
| Biochemistry | 1 | 2 |
| Horticulture | 12 | 19 |
| Plant Pathology | 3 | 5 |
| Rural Sociology | 1 | 2 |
| Soil & Water Conservation | 3 | 5 |
| Other | 4 | 6 |
| | 62 | 100 |

Respondents were asked how many times within the past year a news reporter had interviewed them. More than 70% of respondents had been interviewed at least once during the previous year, with 11.7% having been interviewed 10 or more times. Two did not answer this question. (See Table 2.)

Table 2

*Number of Times Respondents Were Interviewed in Previous Year*

| Number of Times | *N* | Percent |
|---|---|---|
| 0 | 17 | 28.3 |
| 1-3 | 24 | 40 |
| 4-6 | 10 | 16.7 |
| 7-9 | 2 | 3.3 |
| 10 or more | 7 | 11.7 |
| | 60 | 100 |

Those who had not been interviewed in the previous year were asked to provide a reason why they had not given an interview. Sixty percent (n=11) responded that a reporter had not contacted them, one respondent did not have time for interviews, another does not grant any news interviews, and two respondents indicated that the news media "do not understand the agricultural discipline." Four respondents provided other reasons for not doing an interview, including "reporters weren't interested in my field" and "other people are assigned to talk to reporters."

The 43 respondents who had been interviewed in the previous year also were asked to describe their perceptions of their news interview experiences. Five sets of bipolar adjectives, each on a one-to-five-point semantic differential scale, were utilized. The sets of descriptors were "positive" (1) to "negative" (5), "nervous" (1) to "calm" (5) "frustrating" (1) to "satisfying" (5), "beneficial" (1) to "harmful" (5), and "helpful" (1) to "unhelpful" (5). The mean for each set of descriptors is provided in Table 3. Findings showed that respondents felt that their experiences were more positive, beneficial, and helpful than negative, harmful, and unhelpful. They also felt their experiences were slightly more "frustrating" than "satisfying" and "nervous" as opposed to "calm."

Table 3

***Respondents' Perceptions of Their Interview Experiences***

| Response scale item | *N* | *Mean* | *SD* |
|---|---|---|---|
| *Positive (1), Negative (5) | 43 | 2.05 | .72 |
| Nervous (1), Calm (5) | 44 | 3.61 | 1.22 |
| Frustrating (1), Satisfying (5) | 43 | 3.44 | .85 |
| Beneficial (1), Harmful (5) | 43 | 2.07 | .66 |
| Helpful (1), Unhelpful (5) | 43 | 2.16 | .65 |

*Descriptor word sets were on a five-point scale.

Respondents were then asked if they had ever had training on how to work with the news media. Forty respondents said they had had training, 21 had not had training, and one person did not respond. Those who had taken news media training were asked to describe the training they had received. Again, five sets of bipolar adjectives, each on a one-to-five-point semantic differential scale, were utilized. The sets of descriptors were "adequate" (1) to "inadequate" (5), "positive" (1) to "negative" (5), "frustrating" (1) to "satisfying" (5), "beneficial" (1) to "harmful" (5), and "helpful" (1) to "unhelpful" (5). The mean for each response scale item is provided in Table 4. Overall, findings showed that respondents' felt their media training experiences were more adequate, positive, satisfying, beneficial and helpful than inadequate, negative, frustrating, harmful and unhelpful.

Table 4

*SAAS Members' Media Training Experiences*

| Response scale item | *N* | *Mean* | *SD* |
|---|---|---|---|
| *Adequate (1), Inadequate (5) | 23 | 2.61 | 1.03 |
| Positive (1), Negative (5) | 23 | 2.13 | .69 |
| Frustrating (1), Satisfying (5) | 23 | 3.26 | .92 |
| Beneficial (1), Harmful (5) | 23 | 2.22 | .80 |
| Helpful (1), Unhelpful (5) | 23 | 2.22 | .80 |

*Descriptor word sets were on a five-point scale.

SAAS member respondents were asked to indicate, on a scale of 1 to 5 with 1 being "very confident" and 5 being "very unconfident," how confident they were in their news media relations capabilities in several response areas. (See Table 5.) Overall, respondents indicated they were confident or very confident in their news media relations capabilities, except in establishing a news media relations program.

Table 5

*Respondents' Confidence in Their News Media Relations Capabilities*

| | ***N*** | ***Mean*** | ***SD*** |
|---|---|---|---|
| *Being interviewed by a reporter. | 62 | 2.26 | .94 |
| Establishing a news media relations program. | 59 | 3.29 | 1.08 |
| Contacting the news media. | 62 | 2.76 | 1.21 |
| Communicating effectively to the news media in a crisis situation. | 62 | 2.73 | 1.13 |
| Writing a newspaper column. | 62 | 2.24 | 1.02 |

*Five-point scale, with 1=very confident to 5=very unconfident.

Survey participants then were asked to indicate, on a scale of 1 to 5 with 1 being "very likely" and 5 being "very unlikely," which media relations skill areas they would take training in if it were available. Results indicated that 68% (n=42) of respondents would be very likely or likely to learn how to be interviewed by a news reporter, and 14.8% would be unlikely or very unlikely to learn how to be interviewed. Thirty-five percent (n=22) would be unlikely or very unlikely to learn how to establish a media relations program, and 44% (n=27) would be likely to learn how to establish a news media relations program. Fifty percent would be likely or very likely to learn how to contact the news media; 24% would be unlikely or very unlikely to learn how to contact the news media. Seventy-six percent (n=47) would be likely or very likely to learn how to communicate in a crisis situation; while only 9.7% (n=6) would be unlikely or very unlikely to learn how to communicate to the media in a crisis situation. Thirty-eight respondents (61.3%) would be likely or very likely to learn how to write a newspaper

column, and 11 (17.8%) would be unlikely or very unlikely to learn how to write a newspaper column.

## Discussion and Conclusions

In general, the members of the Southern Association of Agricultural Scientists who participated in this study had been employed in universities for several years, as indicated by their academic rank, were male, and were more representative of the physical and biological sciences (agronomy, animal science, biochemistry, horticulture, plant pathology, soil and water conservation), than the social sciences (agricultural communications, agricultural economics, agricultural education, rural sociology).

Most respondents had been interviewed at least once during the previous year and had positive experiences in the interview process. Those who had not been interviewed in the past year indicated the reason was that a reporter had not called them. This may indicate that reporters are not aware of what the scientists do or see how what agricultural scientists do impact the readers or viewers in their geographic area. Media relations training on how to contact news reporters or how to establish a news media relations program may help scientists pitch news stories to reporters, or a university's news and public affairs department may need to learn more about the agricultural science research being conducted so the news and public affairs department, on behalf of the scientists, could pitch news stories. Still, agricultural scientists may need to take the initiative and contact their university's news and public affairs department to inform the department about the agricultural research being conducted.

Respondents were confident in their media relations capabilities, ranging from being interviewed by a news reporter to writing a newspaper column. Approximately

two-thirds had taken some type of media relations training and were positive about what they had learned. Respondents also would be likely to take media relations training, even on topics which they had taken training in previously, indicating that respondents may not be as confident about their media relations capabilities as they purported in this study, or that they are willing to take training – even in areas that they have had previous training – to stay "sharp." Areas that respondents said they would be most likely to take training were communicating effectively in crisis situations and writing newspaper columns.

It would appear that agricultural scientists have had media relations training and have ready access to ongoing training. The media relations training was seen as valuable; SAAS members said the training was beneficial, satisfying, and positive. This finding indicates that current media relations training efforts at universities or agriculture-related institutions are making a direct and positive impact on agricultural scientists. This also indicates that because of the positive training experience that agricultural scientists had, coupled with the number of interviews that SAAS scientists granted in the previous year, the training is paying off; scientists are using what they have learned. The greatest evidence of this pay-off is that 45 of the 62 respondents granted at least one interview in the previous year, and of that number seven had granted 10 or more interviews during the year; reporters would not keep going back to a source if that source was not capable of providing a good interview.

A limitation of the study was the relatively low response rate, especially in the social science fields, which limits the generalizability of these findings. This may be due to individuals in these fields not seeing themselves as scientists, but more as academics

and researchers. If so, this represents an interesting potential area for future research. It would seem reasonable that social scientists, trained in the dynamics of human perception, would be likely candidates to do an effective job of presenting their findings with respect to societal responses to agricultural sciences, especially in controversial areas. A recommendation from this study would be to conduct a follow-up study exclusively with SAAS member social scientists, in an attempt to assess perceptions as to their role and identification as scientists, and to include items from the original survey instrument so as to compare responses to scientists in the physical and biological fields.

## References


Dillman, D. A. (1999). *Mail and Internet surveys: The tailored design method, 2nd Edition.* New York: John Wiley and Sons.

Duke, S. (2002). Wired science: Use of the World Wide Web and e-mail in science public relations, *Public Relations Review,* 28(3), 311-24.

EFB Task Group on Public Perceptions of Biotechnology. (1996). *Dealings with the media.* Retrieved March 5, 2003, from http://www.bioportfolio.com/efb5.htm.

Gascoigne, T., & Metcalfe, J. (1997) *Incentives and impediments to scientists communicating through the media.* Retrieved February 12, 2003, from http://www.usyd.edu.au/su/fasts/1997/GascoigneMetcalfe.html

Hagins, S., Lockaby, J., Akers, C., & Lance, K. (2002). *Associated Press wire service coverage of agricultural issues*. Paper presented at the meeting of the Southern Association of Agricultural Scientists, Agricultural Communications Section, Orlando, FL.

Hallman, W. K. & Metcalfe, J. (1995). *Public perceptions of agricultural biotechnology: A survey of New Jersey residents.* Retrieved March 5, 2003, from USDA National Agricultural Library at http://www.nal.usda.gov/bic/Pubpercep/.

Hartz, J., & Chappell, R. (1997). *Worlds apart.* Tennessee: First Amendment Center.

Hoban, T. J. (1998). Trends in consumer attitudes about agricultural biotechnology. *AgBioForum,* 1(1). Retrieved March 5, 2003, from http://www.agbioforum.org/v1n1/v1n1a02-hoban.htm.

Metcalfe, J., & Gascoigne, T. (1997). *Media skills workshops: Breaking down the barriers between scientists and journalists.* Retrieved March 5, 2003, from http://www.pantaneto.co.uk/issue3/Metcalfe.htm.

Nelkin, Dorothy. (1995). *Selling science: How the press covers science and technology.* New York: W. H. Freeman.

Reed, R. (2001). (Un-)professional discourse? *Journalism,* 2(3), 279-298.

Reed, R., & Walker, G. (2002). Listening to scientists and journalists. *Science Journalism,* Fall 2002, 45-46.

Southern Association of Agricultural Scientists. (2002). *Introduction to the Southern Association of Agricultural Scientists.* Retrieved November 15, 2002, from http://cals.agnis.vt.edu/~saas/navigator/intro.html.

Stringer, S., & Thomson, J. (1999, June 12-16). *Defining agricultural issues: Daily newspapers editors' perspectives*. Paper presented at Agricultural Communicators in Education/National Extension Technology Conference, Knoxville, Tennessee.

# Selected Texas Agricultural Commodity Board Members' Perceptions of the 2002 U.S. Farm Bill

Christa L. Catchings[1]

Gary J. Wingenbach[2]

Texas A&M University

Department of Agricultural Education

2116 TAMU

College Station, Texas 77843-2116

Phone: 979-862-1507

FAX: 979-845-6296

Email: ccatchings@aged.tamu.edu

g-wingenbach@tamu.edu

[1] Christa Catchings is a graduate research assistant in the Department of Agricultural Education at Texas A&M University.

[2] Gary J. Wingenbach is an assistant professor of agricultural communications and journalism in the Department of Agricultural Education at Texas A&M University.

Abstract

Cooperative Extension Service personnel play a major role in educating the public about U.S. Farm Bills. The purpose of this study was to determine selected Texas agricultural commodity board members' perceptions of the 2002 U.S. Farm Bill. Board members representing the Texas Corn Growers, Cotton Growers, Grain Sorghum Producers, and Wheat Producers Associations responded. Respondents ($N = 50$) were mostly male, represented a cotton growers association, and were 46 to 55 years old. Respondents ranked farm commodity programs, disaster assistance, and international trade as the most important 2002 Farm Bill programs. Respondents strongly agreed that their respective organizations influenced the final outcome of the 2002 Farm Bill. Extension/University and Internet were rated as good information sources to learn about the farm bill. Cotton association board members perceived organizational influencers had more, and corn board members perceived organizational influencers had less effect on the final outcome of the 2002 Farm Bill.

Additional research is needed to determine if agricultural commodity board members used the Internet to access agricultural policy information from Extension service and/or university-based Web sites. Continued work in gathering agricultural commodity board and organization members' input will be beneficial to policy makers as new farm bills are crafted, debated, enacted, and implemented. Equally, agricultural commodity board and organization members' perceptions about farm bill educational materials developed by agricultural communications professionals and/or Cooperative Extension Service personnel will improve the processes for educating the public about the 2002 U.S. Farm Bill.

Keywords: Communications, U.S. Farm Bill, Agricultural Commodity Boards, Texas, Extension

## Introduction

When the U.S Farm Bill is being formed, state-level agricultural commodity board members consider the advice of national and congressional leaders and lobbyists working on their behalf. State-level agricultural commodity group members' perceptions may be influenced by this advice. Several questions may be derived from this observation. Do state-level agricultural commodity board members perceive their organization's U.S. Farm Bill interests from a local or national perspective? What issues, if any, in the U.S. Farm Bill are most important to agricultural commodity group board members? Do they communicate their commodity group's farm bill interests to local members in an unbiased manner?

## Conceptual Framework

The U.S. government's role in farm policy changes every six years. During the initial debates and policy formation processes, national commodity board members and congressional leaders create the farm bill provisions, which affect agricultural producers nationwide. Current and future leaders of agricultural organizations may not have the abilities to assess accurately their member's contributions to the farm bill. Researchers (Mark, Daniel & Parcell, 2002) found producers' and non-producers' needs and perceptions of farm bill provisions useful to policy makers in the development of the 2002 Farm Bill. Most commodity organizations make valid attempts to provide input to the farm bill, but research is vague regarding the value of this input (Sulak, 2000).

During the 1930s, when farm commodity programs started, farm organizations began losing political influence (Sulak, 2000). The loss of political influence was caused by commodity legislation directly impacting particular groups (Bockstael & Just, 1991). Agricultural organizations play an integral role in farm policy enactment and implementation. For the past

70+ years, farm policy makers have treated agricultural organizations as mediums of information and communication. Farm organizations tend to emphasize economic issues and the general farm program framework (Morrison, 1970). In the past, most agricultural committees were concerned with world trade, competition in the world market, and efforts to reduce the influence of the government in farm programs (Westcott, Young, & Price, 2002). U.S. agricultural policy has focused on distribution of the nation's vast land resources, increasing the productivity and standard of living of American farmers, and assisting farmers in marketing their product (Westcott, Young, & Price, 2002). Many farm policies have helped reduce federal involvement, while increasing programs that were geared toward market orientation in the agricultural sector (Young & Westcott, 1996).

The 2002 Farm Bill, "The Farm Security and Rural Investment (FSRI) Act of 2002," was the most argued piece of legislation in the USDA's history. The scope and complexity of the new farm legislation suggests that the Farm Service Agency (FSA) and other USDA agencies have a large task of creating regulations to implement FSRI, while educating producers of the provisions, alternatives, and benefits available to them (Mark, Daniel, & Parcell, 2002). The House Agriculture Committee held several hearings allowing commodity groups to present specific recommendations for the new farm bill. Most recommendations raised were similar to those of found in previous farm bills. The recommendations included enhancing risk management, assurance in income safety nets for producers, improvements in the agriculture trading sector, and assisting smaller and limited-resource farms.

Sulak (2000) found national agricultural commodity organization leaders deemed commodity programs as the most important provision in the 1996 FAIR Farm Bill. The same 26 leaders believed international trade programs were the second most important provision. Sulak

noted that agricultural commodity board leaders should be, but were not, concerned about environmental and international trade programs. Respondents believed their respective organization's members were pleased with the FAIR Farm Bill. Also, leaders perceived that the Agriculture Committee Chairs and congressional leadership influenced the 1996 Farm Bill formation process most, while the Clinton Administration influenced it the least. Sulak concluded that national agricultural commodity organizations had little or no influence on the final outcome of the 1996 Farm Bill. Sulak stated that depending on the particular commodity, support or opposition of the farm bill varied.

Sulak's (2000) study indicated a need for agricultural organizations to join coalitions to gain strength in influencing agricultural policy development. She recommended additional research to understand agricultural commodity organizations leaders' and members' needs in future farm bills. An understanding of their needs may help determine strengths and weaknesses of an organization's role in agricultural policy development. Educators and land-grant universities play an important role in providing options/assistance to producers while new farm bills are being formed.

Mark, Daniel, and Parcell (2002) studied Kansas producers and agribusiness professionals' perceptions of the changes in agricultural policy from 1996 to 2000. The study showed changes occurred in producers' perceptions of federal agricultural policy, fostering immediate interest in the FAIR Act's impacts on farm income, income variability, land values, and crop acreage mixes. In this study, Kansas producers' perceptions were generally favorable toward the FAIR Act. The results showed producers' and non-producers' perceptions of FSRI were useful to policy makers and agricultural interest groups preparing FSRI 2002. The authors reported that "decision to retain elements of previous farm programs, with modification, in the

2002 farm program was based, as least partially, on producer preferences for those elements and their perception of how they would benefit from the program as their operations changed in the future" (pg. 3). Even though the researchers used small and nonrandom samples, the producer information regarding farm policy can be useful to policy makers evaluating differences in policy impacts for farming operations of various sizes or geographic location.

Mark, Daniel, and Parcell (2002) noted that because farm policy is created with consideration given to producers' and agribusiness persons' perceptions, it is important to gather such information. This information could be used by policymakers to help create future farm bills that better fit what producers and agribusiness people need, while monitoring how well the current farm bill meets their needs. Cooperative Extension Service personnel are often in good position to help gather this information. Additional efforts are needed in gathering consumers' perceptions of agricultural policy in the future.

## Purpose and Objectives

The purpose of this study was to assess selected agricultural commodity board members' (Texas Grain Sorghum, Corn, Wheat and Cotton Associations) perceptions of the 2002 U.S. Farm Bill. The following objectives guided this study.

1. Determine the most important producer programs in the 2002 Farm Bill.
2. Describe organizational support of the primary issues in the 2002 Farm Bill.
3. Determine organizational influencers affecting the final outcome of the 2002 Farm Bill.
4. Describe the sources of information for understanding the 2002 Farm Bill.
5. Determine if relationships existed between respondents' perceptions and selected demographic variables.

## Methods

A descriptive survey design was employed in this study. The target population was all Texas agricultural commodity board members representing the Corn Producers, Cotton Growers, Grain Sorghum, and Wheat Producers Associations. The target population ($N = 256$) represented the major Texas agricultural commodity groups who had a vested interest in the 2002 Farm Bill. The accessible population was considerably less ($n = 100$), due to commodity boards' privacy concerns about the release of their members' personal information.

A stratified-random sample ($n = 80$) was used to elicit respondents' participation in the study. Kumar (1999) stated a stratified-random sampling method reduces the heterogeneity in a population. Basically, a stratified-random sample ensures that groups in the population are adequately represented (Gall, Borg, & Gall, 1996). Questionnaires, cover letters, and return envelopes were sent to commodity board directors in mid-fall 2002, with instructions to distribute, collect, and return the instruments after their annual winter board meetings. Only one response was collected from the grain sorghum association, thereby eliminating or severely limiting their inclusion in this study. A 63% response rate was attained from corn, cotton, wheat, and grain sorghum commodity board members. Despite repeated and unsuccessful follow-up procedures to non-respondents, caution is warranted against generalizing the results of this study beyond the accessible population.

A modified version of Sulak's (2000) 1996 Farm Bill Survey was used to collect the data. The survey instrument contained a total of 20 questions with multiple parts to each question. Producer program importance was measured using a rank order list of six major programs (farm commodity programs; conservation, environment and water quality programs; disaster assistance programs/crop insurance; international trade programs; foreign food aid programs; and

promotion programs/check-off) in the 2002 Farm Bill. Organizational support of the primary issues was measured using an inventory (opposed, neutral, or support) on nine issues (target prices; decoupled payments planting flexibility; marketing loans; non-recourse loans; crop insurance; payment limitations; conservation compliance requirements; wetland protection; and environmental quality incentive program) in the farm bill. Organizational influencers affecting the final outcome of the 2002 Farm Bill were measured using a Likert-type scale (1 = strongly disagree…4 = strongly agree). The value of commodity board members' sources of information were measured using a similar Likert-type scale (1 = poor…4 = excellent). A Cronbach's alpha coefficient of .63 was produced for the organizational influencers scale, and .76 for the sources of information value scale in this study.

Content and face validity were established by a panel of experts from Texas agricultural commodity board members who did not participate in this study. The instrument was field-tested prior to data collection and approval to perform the study was granted by the Texas A&M University Institutional Review Board (#2002-548). Minor editing (wording) changes were made to the final version of the research instrument. Demographic data were analyzed using descriptive statistics. Significant relationships were explored using bivariate analyses.

## Results

Respondents were mostly male (98%), represented a cotton growers association (66%), and were 46 to 55 years old (46%). They had attended college or completed an undergraduate degree (80%), were raised on a farm or ranch (74%), and currently owned a family-operated farm or ranch (98%) (Table 1).

Table 1

*Demographic Frequencies of Respondents (N = 50)*

| Variables | | *f* | Percent[a] |
|---|---|---|---|
| Gender: | Male | 49 | 98 |
| Commodity organization: | Cotton | 33 | 66 |
| | Corn | 11 | 22 |
| | Wheat | 5 | 10 |
| | Grain Sorghum | 1 | 2 |
| Age: | 46-55 | 23 | 46 |
| | >56 | 17 | 34 |
| | 36-45 | 5 | 10 |
| | 26-35 | 4 | 8 |
| Education: | Undergraduate degree | 26 | 52 |
| | Attended college | 14 | 28 |
| | High School diploma | 5 | 10 |
| | Masters degree | 2 | 4 |
| | Doctoral degree | 2 | 4 |
| Location where raised: | Rural farm/ranch | 37 | 74 |
| | Rural Community | 7 | 14 |
| | Town (5,000-50,000) | 2 | 4 |
| | Small City (50,001-200,000) | 2 | 4 |
| Family-owned farm or ranch: | Yes | 49 | 98 |

*Note*. [a]Frequencies may not equal 50 because of missing data.

To complete the first objective, respondents' were asked to rank order the most important producer programs in the 2002 Farm Bill. Six programs (Sulak, 2000) were included to determine respondents' perceptions of farm bill programs impacting their respective agricultural commodity organizations (Table 2). Respondents ranked farm commodity programs, disaster assistance, and international trade as the most important 2002 Farm Bill programs. Foreign food aid, promotion/check-off, and conservation programs were ranked least important.

Table 2

*Respondents' Ranking of Important Producer Programs in the 2002 Farm Bill (N = 50)*

| Programs | Ranking Frequencies[a] | | | | | | Overall Rank[b] |
|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | |
| Farm commodities | 44 | 3 | 2 | — | — | — | 1 |
| Disaster assistance/crop insurance | 6 | 29 | 4 | 9 | 1 | — | 2 |
| International trade | 3 | 10 | 12 | 12 | 11 | — | 3 |
| Conservation, environment and water quality | 1 | 2 | 21 | 9 | 13 | — | 4 |
| Promotion/check-off | 8 | 2 | 9 | 9 | 13 | — | 5 |
| Foreign food aid | 1 | 1 | 4 | 3 | 10 | 2 | 6 |

*Note*. [a]Frequencies may not equal 50 because of missing data. [b]Overall rank was determined by weighting raw scores in reverse order; 1st place scores received six points each, while 6th place scores received one point each. Individual weighted scores for each program were summated to derive the overall rank.

Organizational support of the nine primary issues in the 2002 Farm Bill was measured using an inventory (opposed, neutral, or support). Respondents indicated their organization's initial position to each issue before it became a part of the farm bill (Table 3). Selected Texas agricultural commodity board members believed their organizations initially were most supportive of issues concerning target prices, marketing loans, and planting flexibility (88%, all). Least supported (10%), and most opposed (78%), was the issue of payment limitations (Table 3).

Table 3

*Frequencies of Respondents' Perceptions of Organizational Support for Primary Issues in the 2002 Farm Bill (N = 50)*

| | Opposed | | Neutral | | Support | |
|---|---|---|---|---|---|---|
| Issues | *f* | Percent[a] | *f* | Percent[a] | *f* | Percent[a] |
| Target prices | | | 4 | 8 | 44 | 88 |
| Marketing loans | 3 | 6 | 2 | 4 | 44 | 88 |
| Planting flexibility | 3 | 6 | 2 | 4 | 44 | 88 |
| Crop insurance | | | 7 | 14 | 40 | 80 |
| Non-recourse loans | 3 | 6 | 4 | 8 | 38 | 76 |
| Environmental quality incentive program | 3 | 6 | 8 | 16 | 33 | 66 |
| Conservation compliance requirements | 6 | 12 | 21 | 42 | 16 | 32 |
| Wetland protection | 4 | 8 | 31 | 62 | 10 | 20 |
| Payment limitations | 39 | 78 | 5 | 10 | 5 | 10 |

*Note*. [a]Percentages may not equal 100% for each issue because of missing data.

To complete the third objective, respondents were asked to record their agreement levels for 12 statements measuring their perceptions of organizational influencers affecting the final outcome of the 2002 Farm Bill (Table 4). Respondents strongly agreed that their respective organizations influenced the final outcome of the 2002 Farm Bill ($M = 3.52$). They agreed that farm organization coalitions were essential for enacting the 2002 Farm Bill ($M = 3.49$). They disagreed with the statement that their organizations' policy influence had decreased with the current farm bill, more than it had compared to previous farm bills ($M = 1.84$) (Table 4).

Table 4

*Descriptive Statistics for Agricultural Commodity Board Members' Perceptions of Influencers Affecting the Final Outcome of the 2002 Farm Bill (N = 50)*

| Statements | *M* | *SD* |
|---|---|---|
| Your organization strongly influenced the final outcome of the 2002 Farm Bill | 3.52 | .65 |
| Farm organization coalitions were essential for enacting the 2002 Farm Bill | 3.49 | .77 |
| Ag Committee Chairs influenced the 2002 Farm Bill more than in previous farm bills | 3.19 | .67 |
| Farm organizations had more influence than agribusinesses on the 2002 Farm Bill | 3.16 | .62 |
| Congressional leadership influenced the 2002 Farm Bill more than previous farm bills | 2.96 | .70 |
| Environmental interest groups influenced the 2002 Farm Bill more than previous bills | 2.94 | .63 |
| Environmentalists' interests were opposite of farmers for the 2002 Farm Bill | 2.89 | .91 |
| Non-farm interest groups strongly influenced the 2002 Farm Bill | 2.84 | .80 |
| Agriculture Subcommittees influenced the 2002 Farm Bill more than in previous bills | 2.77 | .60 |
| The 2002 Farm Bill has more impact on farm production than previous farm bills | 2.66 | .73 |
| Agribusinesses had more influence than farm organizations on the 2002 Farm Bill | 2.23 | .67 |
| Your organization's policy influence in the 2002 farm bill decreased compared to previous farm bills | 1.84 | .66 |

*Note*. A Likert-type scale (1 = strongly disagree…4 = strongly agree) was used to measure board members' perceptions of influencers affecting the final outcome of the 2002 Farm Bill.

The value of commodity board members' sources of information for education about the 2002 Farm Bill was measured using a Likert-type scale (1 = poor…4 = excellent). Respondents rated seven sources of information used to learn about the farm bill (Table 5). Selected agricultural commodity board members rated Extension/University ($M$ = 3.13) and Internet ($M$ = 2.83) information sources as "good." Radio, television, and newspapers ($M$ = 2.17) and congressional reports ($M$ = 2.33) were rated as "fair" sources of information used to learn about the 2002 Farm Bill (Table 5). No information sources achieved an overall rating of "excellent."

Table 5

*Descriptive Statistics for Agricultural Commodity Board Members' Perceptions of Information Source Value in Learning about the 2002 Farm Bill (N = 50)*

| Statements | *M* | *SD* |
|---|---|---|
| Extension/University | 3.13 | .87 |
| Internet | 2.83 | .99 |
| Magazines, journals, farm publications | 2.63 | .76 |
| Satellite technologies | 2.51 | .83 |
| Consultants | 2.50 | .80 |
| Congressional reports | 2.33 | .82 |
| Radio, TV, newspapers | 2.17 | .93 |

*Note*. A Likert-type scale (1 = poor…4 = excellent) was used to measure board members' perceptions of the value of information sources used to learn about the 2002 Farm Bill.

To fulfill the fifth objective, respondents' perceptions of influencers affecting the final outcome of the 2002 Farm Bill, and value of information sources used to learn about the 2002 Farm Bill were summated and correlated with selected demographics (commodity organization type, age, location where raised, and education) to determine if significant relationships existed (Table 6). Because the lone sorghum board member returned incomplete data, those results were not included in the correlational analyses. Therefore, the categories of agricultural commodity organization type, age, location where raised, and education were coded as multichotomous nominal variables. Pedhazur's (1982) convention for dummy coding the variables was used. Davis' (1971) convention was used to describe the magnitude of relationships. Relationships between multichotomous nominal and interval variables were analyzed as Cramer's V correlations (Hinkle, Wiersma, & Jurs, 1994).

A significant, moderate relationship ($r$ = .41) existed between the perceived levels of influencers affecting the final outcome of the 2002 Farm Bill and cotton board members (Table 6). The relationship indicates that cotton association board members perceived organizational

influencers affected the final outcome of the 2002 Farm Bill more ($M$ = 34.70) than did board members from other agricultural commodity organizations ($M$ = 32.98). Also, a significant, moderate negative relationship ($r$ = -.34) existed between the perceived levels of the influencers and corn board members. This inverse relationship indicates that corn association board members perceived organizational influencers had less ($M$ = 29.18) effect on the final outcome of the 2002 Farm Bill than did board members from other agricultural commodity organizations. The final significant, "very strong" negative relationship between cotton and corn board members merely indicates that the dummy-coding schema used was diametrically opposed (Table 6).

Table 6

*Significant Correlation Coefficients among Selected Variables (N = 50)*

| Variables | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Influencers affecting the final outcome of the 2002 Farm Bill | - | -.03 | -.34* | .41** |
| 2. Value of information sources to learn about the 2002 Farm Bill | | - | .09 | .09 |
| 3. Corn[a] | | | - | -.74** |
| 4. Cotton[a] | | | | - |

*Note*. [a]Multichotomous nominal variables; reported as Cramer's V correlation coefficients.
*p<.05
**p<.01

## Conclusions, Recommendations, and Implications

A limited response ($N$ = 50) to this survey does not lend itself well to making sweeping statements about all Texas agricultural commodity board members, but does give insights into the make-up, perceptions, and values of those who did respond. Not surprisingly, respondents were male, 46 years old or older, reared in a rural location, and operated their family-owned farms or ranches. The vast majority had attended college or held an undergraduate degree, which

bodes well, when coupled with age and experience, for the leadership being provided to the corn, cotton, and wheat commodity boards.

One of the primary recommendations resulting from this study emanates, not from the data collected, but from the lack of responses produced. Although agricultural commodity board members value privacy of membership information, a true and accurate accounting of their or their members' perceptions about U.S. agricultural policy cannot be ascertained without greater access to the population of interest. Without adequate access, state- and national-level policy makers can only speculate what agricultural commodity organization members think about the policies affecting producers nationwide. Increased cooperation between Texas agricultural commodity organizations and researchers is needed to gather accurate perceptions about the 2002 Farm Bill.

Respondents valued target prices, marketing loans, and planting flexibility issues most in the 2002 Farm Bill. True to their nature, board members perceived these programs had the most impact on their organizations, and probably held the greatest relevance to their livelihoods. This finding mirrors what was found in an earlier study of national commodity board leaders (Sulak, 2000). Another similarity between Sulak's study and this one was that respondents did not perceive the importance of environmental or international issues highly. Texas agricultural commodity board members were not that different than their national counterparts, but this finding reveals an educational need exists to help commodity board members better understand the interconnectedness of domestic and foreign agricultural markets and production and environmental stewardship.

Concerned that the 2002 Farm Bill would compromise their livelihoods, Texas agricultural commodity board members believed their respective organizations initially opposed

payment limitations. Womack (2002) stated that payment limitations would require agricultural commodity board leaders and members to seek help from the Secretary of Agriculture in establishing procedures to clarify and better identify the payments to individual producers. Womack believed that payment limitations could limit agricultural commodity organization members' ability to produce crops because it puts a cap on eligibility for participation in farm programs. Farm programs would have an overall reduction; limits would be put on direct and counter-cyclical payments.

A shift in perceptions of organizational influencers affecting the final outcome of a farm bill occurred between national (Sulak, 2000) and state-level commodity board members. In Sulak's study, commodity board leaders perceived that the agriculture committee chairs and congressional leadership had the most influence on the 1996 Farm Bill formation process. Sulak concluded that national agriculture commodity organizations had little or no influence on the final outcome of the 1996 Farm Bill. Respondents in this study perceived their respective organizations strongly influenced the final outcome of the 2002 Farm Bill. This shift in perception may be related to the multitude of House Agriculture Committee hearings that allowed commodity groups to present specific recommendations for the new farm bill (Mark, Daniel, & Parcell, 2002). Too, it could be the result of a homogenous respondent group's collective perception that their organization's input had great impact in forming the 2002 Farm Bill. Regardless, continued work in gathering input from agricultural commodity board and organization members will be beneficial to policy makers as new farm bills are crafted, debated, enacted, and implemented.

An important finding in this study was the value commodity board members placed on the Cooperative Extension Service and the land-grant University as an information source for the

new farm bill. Respondents valued these sources, and the Internet, more so than they did for radio, television, or newspapers. It was not clear if board members used the Internet to access Cooperative Extension Service information, but the implication exists that a combination of Extension/University and Internet sources can be a powerful conduit to increase understanding in future farm bills. Cooperative Extension Service faculty and staff can use this finding to ensure their farm bill, and other agricultural policy materials, are up-to-date and posted in an easily accessible manner on the Internet. Additionally, state departments of agriculture may use this result to enhance their own Web sites, while focusing less effort on producing education resources that are radio, television, or newspaper-based. Additional research is needed to determine if agricultural commodity board members are using the Internet to access agricultural policy information from Cooperative Extension Service and/or university-based Web sites. Also, research to determine if commodity board leaders or members can distinguish differences between information sources and channels may help clarify agricultural communications research.

Selected Texas agricultural commodity board members held dissimilar beliefs about an organization's influence on the final outcome of the 2002 Farm Bill. Cotton association board members felt their organization influenced the final farm bill outcome more than did the corn association board members. We were aware that these relationships may be due to actual statistical significance, or they may be the result of a small homogeneous subset of respondents. Additional research, with a larger, more diverse sample will help elucidate these findings. Also, research conducted over time will aid in understanding the relationships between agricultural commodity board members' perceptions of and influences on the final outcome of future farm bills.

A lesson can be learned from Mark, Daniel, and Parcell (2002) that agriculturists' perceptions do change over time and these changes impact agricultural policy at the national level. Farm policy is not enacted in spite of our nation's agriculturists it is enacted because of them. Additional efforts are needed in gathering, analyzing, and reporting agriculturists' perceptions of national agricultural policies. Mark, Daniel, and Parcell noted that the Cooperative Extension Service personnel play a major role in developing and delivering educational programs to educate the public about U.S. Farm Bills. Future efforts are needed in gathering data about stakeholders' perceptions of agricultural policy. Agriculturists' understanding of future farm bills will be dependent upon accurate data collected and used in developing valid and relevant Cooperative Extension Service educational programs.

## References


Bockstael, N., & Just, R. E. (1991). *Commodity and resource policies in agricultural systems.* Berlin: Springer-Verlag.

Davis, J. A. (1971). *Elementary survey analysis*. Englewood, NJ: Prentice-Hall.

Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. White Plains, NY: Longman Publishers, USA.

Hinkle, D., Wiersma, W., & Jurs, S. (1994). *Applied statistics for the behavioral sciences*. Boston: Houghton Mifflin Company.

Kumar, R. (1999). *Research methodology: A step-by-step guide for beginners.* London. Sage Publications.

Mark, D. R., Daniel, M. S., & Parcell, J. L. (2002, August) Gauging perceptions of farm programs. *Journal of Extension, 40*(4). Retrieved May 14, 2003, from http://www.joe.org/joe/2002august/rb2.shtml

Morrison, D. E. (1970). *Farmers' organization and movements. Research needs and a bibliography of the United States and Canada.* (Research Bulletin 24). East Lansing, Michigan: Michigan State University, Agricultural Experiment Station.

Pedhazur, E. (1982). *Multiple regression in behavioral research*. New York: Holt, Rinehart and Winston, Inc.

Sulak, M. (2000). *The impact of the 1996 Farm Bill on members of national commodity organizations as perceived by selected organizational leaders*. Unpublished doctoral dissertation, Texas A&M University, College Station.

Westcott, P. C., Young, C. E., & Price, J. M. (2002). *The 2002 Farm Act: Provisions and implications for commodity markets.* Washington, DC: U.S. Department of Agriculture, Economic Research Service.

Womack, A. (2002). The 2002 Farm Bill: Options and implications. Retrieved May 28, 2003 from http://recenter.tamu.edu/speeches/awrl2002.pdf

Young, C. Edwin, and Paul C. Westcott. (1996). *The 1996 U.S. Farm Act increases market orientation, AIB-726*. Washington, DC: U.S. Department of Agriculture, Economic Research Service.

# Agricultural Scientists' Perceptions of Fairness and Accuracy of Science and Agriculture Coverage in the News Media

**Amanda Ruth**
Graduate Student
University of Florida
amruth@ufl.edu

**Ricky Telg**
Associate Professor
University of Florida
rtelg@mail.ifas.ufl.edu

**Tracy Irani**
Assistant Professor
University of Florida
irani@ufl.edu

**Deanna Locke**
Graduate Student
University of Florida
hogswild@aol.com

Department of Agricultural Education & Communication
P.O. Box 110540
University of Florida
Gainesville, FL 32611-0540
(352) 392-0502
FAX: (352) 392-9585

# Agricultural Scientists' Perceptions of Science and Agriculture Coverage in the News Media


## Abstract

This study examined Southern agricultural scientists' perceptions of the fairness and accuracy of news media reports on agricultural and scientific topics. A stratified random sample of 300 Southern Association of Agricultural Scientists was drawn from the association's online member directory. Sixty-two agricultural scientists responded to the online, Web-based survey, for a response rate of 20.6%. Agricultural scientists' responses tended to fall in the middle of the five-point Likert-type scale on most of the descriptor sets provided to them (fair/unfair, biased/unbiased, trustworthy/untrustworthy, accurate/inaccurate, and balanced/unbalanced). However, the tendency was to be more negative than positive. Respondents were more negative of national news coverage of general scientific topics and topics from their agricultural disciplines, but more positive about local news and agricultural news coverage of science and agricultural stories. Agricultural scientists were also more favorable in their perceptions of coverage of general science topics than of stories in their agricultural discipline.



**Key Words:** perceptions, accuracy, fair, balanced, reporting, agriculture, news media

# Agricultural Scientists' Perceptions of Fairness and Accuracy of Science and Agriculture Coverage in the News Media

## Introduction

The reality of science for most people is what they see or read through mass media channels (Nelkin, 1995). Good reporting allows people to evaluate science policy issues and make rational personal choices; poor reporting can mislead a public that is increasingly affected by science (Nelkin, 1995). The news media, therefore, play a critical role as one of the primary means through which scientific issues are brought to the attention of the general public (Malone, Boyd, & Bero, 2000).

Gascoigne and Metcalfe (1997) conducted a study of 178 Australian scientists who participated in media training workshops to find out the scientists' attitudes toward using the media as a mechanism of communicating their research. Scientists said the media are generally neutral or negative when delivering scientific information to the public. The study also indicated scientists, in general, essentially distrust the media and doubt the media's potential to help their field.

Nelkin (1995), who has conducted extensive research on scientist and media relations, wrote that scientists mistrust journalists and criticize the reporting about their fields. Scientists also believe that journalists care little about the truth; reporters, scientists say, are more interested in the story, rather than the facts. Nelkin also has found that scientists complain about inaccurate, sensational, and biased reporting. She indicated a fear among scientists that the media encourages anti-science attitudes.

Hartz and Chappell (1997) found that scientists who are inexperienced in media training are fearful of misrepresentation and inaccuracy. They see the media as exploitive, manipulative, and sensationalistic in their reporting of scientific findings.

Only 11% of the scientists surveyed expressed a great deal of confidence in the media, while 22% said they had hardly any confidence in the media. As for reporting science issues, 30% said national television does a poor job, yet about 50% said the information was fair. Nearly 33% of scientists said national newspapers did a better job of general coverage, and about 50% said the national newspapers did an excellent job of science and technology coverage.

Hartz and Chappell (1997) also surveyed journalists about their perceptions of scientists. Journalists complained about scientists – immersed in their own jargon – as being intellectual and failing to explain their work simply to reporters or the public. Reporters also said scientists needed to communicate the issue that is relevant to the public, because science research is often complex. The survey showed that the majority of journalists had a great deal of confidence in scientists. About 63% said they think scientists want the public to know about their work.

One subset of the scientific community is agricultural science. However, even though agriculture is important to America's economic, environmental, and cultural growth, agricultural news is surprisingly a neglected topic in the mass media (Stringer & Thomson, 1999). Given the importance of providing information to the public through the news media, the question of how scientists – in this case, agricultural scientists – perceive the coverage of scientific and agricultural topics in the news media need to be raised. Agricultural scientists' perceptions about story coverage may impact their willingness to work with the media to get information to the public. Therefore, the purpose of this study was to explore a group of agricultural scientists' perceptions of news media reports on agricultural and scientific news.

## Methodology

The target population for this study was agricultural scientists who are members of the Southern Association of Agricultural Scientists (SAAS). SAAS members are agricultural leaders in education and industry who promote the interests of Southern agriculture (Southern Association of Agricultural Scientists, 2002). SAAS is comprised of a diverse group of academics and professionals in the agricultural sector of 13 Southern states.

To conduct the study, a stratified random sample (n=300) of SAAS members was drawn from the association's online member directory. In order to stratify the sample, the entire SAAS membership directory was first grouped according to scientific discipline (agricultural communications, agricultural economics, agricultural education, agronomy, animal science, biochemistry, horticulture, plant pathology, rural sociology, and soil and water conservation). Only members with complete directory information (name, discipline, and e-mail address) were accessed. Every third member from each discipline was selected to randomize the sample.

The study utilized a 17-item, researcher-developed survey instrument that was descriptive in nature. The instrument included sections on scientists' perceptions of news media, their experiences with being interviewed by news media, their level of confidence/need for training in working with the media, and demographics. All items, with the exception of demographics, utilized five-point Likert-type scales for each response stem. The variables focused on for this study were the scientists' perceptions of stories covered by news media (all news media, national news media, local news media, agricultural news media) pertaining to agricultural and general scientific topics.

Participants provided responses about their perceptions, based on the degree of fairness, balance, trustworthiness, accuracy, and bias.

To assure face and content validity, a panel of experts, comprised of media relations experts reviewed the survey, and it was subsequently revised to reflect panel members' suggestions. The resulting instrument was then pilot-tested with a sub-sample (n=17) of SAAS members who were not included in the final study. The results of the pilot study were used to further refine the instrument for use in the actual study.

The survey was developed as an online, Web-based survey instrument, using form development and data collection procedures as outlined by Dillman (1999). To initiate the survey, respondents first received an email cover letter informing them about the Web-based survey and providing them with a respondent code to keep track of respondents and non-respondents. After the initial posting of the survey, respondents were given two weeks to return it. A follow-up reminder was then sent to nonrespondents. A third and final reminder was sent one month later. After data collection, survey response data was utilized to assess reliability of the instrument, resulting in a Chronbach's alpha for the overall scale of .86.

## Results

Of the 300 SAAS members surveyed, 62 responded, for a response rate of 20.6%, with 85% (n=53) male and 15% (n=9) female respondents. The majority of respondents had been employed in a university setting for several years; slightly more than half were at the associate professor (20%) or full professor (31%) levels. However, 28% said their job title fell in the "other" category, with most of these stating their titles were

"government scientist" and "Experiment Station director or superintendent." Table 1 shows the number and percentage of respondents by discipline.

Table 1

*Respondents According to Academic Discipline*

| Academic Discipline | *N* | Percent |
|---|---|---|
| Agricultural Communications | 0 | 0 |
| Agricultural Economics | 13 | 21 |
| Agricultural Education | 1 | 2 |
| Agronomy | 11 | 17 |
| Animal Science | 13 | 21 |
| Biochemistry | 1 | 2 |
| Horticulture | 12 | 19 |
| Plant Pathology | 3 | 5 |
| Rural Sociology | 1 | 2 |
| Soil & Water Conservation | 3 | 5 |
| Other | 4 | 6 |
| | 62 | 100 |

Respondents were asked to describe their perceptions of coverage of news reports focusing on their agricultural discipline and of scientific topics in general. Perceptions were assessed by utilizing five sets of bipolar descriptive adjectives, each on a one-to-five-point semantic differential scale. The sets of descriptors were "fair" (1) to "unfair" (5), "balanced" (1) to "unbalanced" (5), "trustworthy" (1) to "untrustworthy" (5), "accurate" (1) to "inaccurate" (5), and "biased" (1) to "unbiased" (5). The respondents also were asked to respond to news media coverage in four categories: <u>all</u> news media (encompassing national, local, and agricultural news), <u>national</u> news media, <u>local</u> news media, and <u>agricultural</u> news media. The term "news media" was defined in the survey as referring "to all of the communication channels through which news travels to the general public (television, newspapers, radio, magazines, Internet)." The mean scores for each news media area (all, national, local, agricultural) are provided in Tables 2-9.

When asked about their perceptions of topics in their agricultural discipline as reported in all news media, respondents perceived that most news media reports were fairly neutral, with most of the responses tending to be slightly more negative on the five-point scale than positive. The respondents felt most strongly that stories were more biased than unbiased. The mean for each response scale item is provided in Table 2.

Table 2

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in All News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **all** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 3.16 | .711 |
| Balanced (1), Unbalanced (5) | 61 | 3.18 | .885 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.21 | .819 |
| Accurate (1), Inaccurate (5) | 61 | 3.26 | .835 |
| Biased (1), Unbiased (5) | 50 | 2.44 | .884 |

*Descriptor word sets were on a five-point scale.

Respondents felt that coverage of stories on topics in their agricultural discipline as reported by local news media was more positive, although, again, the tendency was to hover around a neutral stance. The respondents felt most strongly that stories were more fair than unfair. The mean for each response scale item is provided in Table 3.

Table 3

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in Local News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **local** news media are: | | | |
| *Fair (1), Unfair (5) | 62 | 2.42 | .615 |
| Balanced (1), Unbalanced (5) | 62 | 2.76 | .824 |
| Trustworthy (1), Untrustworthy (5) | 62 | 2.76 | .848 |
| Accurate (1), Inaccurate (5) | 62 | 3.05 | .876 |
| Biased (1), Unbiased (5) | 61 | 2.98 | .922 |

*Descriptor word sets were on a five-point scale.

When asked about their perceptions of topics in their agricultural discipline as reported in national news media, respondents indicated that news reports were more negative than positive in each category. Respondents noted that national news reports were more biased than unbiased, untrustworthy rather than trustworthy, inaccurate rather than accurate, unbalanced rather than balanced, and unfair rather than fair. The mean for each response scale item is provided in Table 4.

Table 4

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in National News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **national** news media are: | | | |
| *Fair (1), Unfair (5) | 62 | 3.37 | .854 |
| Balanced (1), Unbalanced (5) | 62 | 3.47 | .918 |
| Trustworthy (1), Untrustworthy (5) | 62 | 3.50 | .937 |
| Accurate (1), Inaccurate (5) | 61 | 3.49 | .924 |
| Biased (1), Unbiased (5) | 62 | 2.40 | 1.108 |

*Descriptor word sets were on a five-point scale.

Respondents were generally positive about the coverage of topics in their agricultural discipline as reported in agricultural news media, although only slightly so in the biased/unbiased descriptor set. The mean for each response scale item is provided in Table 5.

Table 5

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in Agricultural News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **agricultural** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 2.20 | .771 |
| Balanced (1), Unbalanced (5) | 61 | 2.53 | .970 |
| Trustworthy (1), Untrustworthy (5) | 62 | 2.29 | .837 |
| Accurate (1), Inaccurate (5) | 62 | 2.24 | .761 |
| Biased (1), Unbiased (5) | 62 | 3.05 | 1.137 |

*Descriptor word sets were on a five-point scale.

In terms of coverage of general scientific topics covered in all news media, respondents perceived that science stories were reported more negatively than positively. The mean for each response scale item is provided in Table 6.

Table 6

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in All News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **all** news media are: | | | |
| *Fair (1), Unfair (5) | 60 | 3.03 | .758 |
| Balanced (1), Unbalanced (5) | 61 | 3.20 | .726 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.28 | .636 |
| Accurate (1), Inaccurate (5) | 61 | 3.39 | .714 |
| Biased (1), Unbiased (5) | 61 | 2.57 | .865 |

*Descriptor word sets were on a five-point scale.

For local news media's coverage of general scientific topics, agricultural respondents perceived that local news stories were more positive in three descriptor sets, except for biased/unbiased and accurate/inaccurate. The mean for each response scale item is provided in Table 7.

Table 7

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in Local News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **local** news media are: | | | |
| *Fair (1), Unfair (5) | 60 | 2.53 | .700 |
| Balanced (1), Unbalanced (5) | 60 | 2.78 | .761 |
| Trustworthy (1), Untrustworthy (5) | 61 | 2.82 | .866 |
| Accurate (1), Inaccurate (5) | 61 | 3.07 | .892 |
| Biased (1), Unbiased (5) | 61 | 2.97 | .823 |

*Descriptor word sets were on a five-point scale.

Interestingly, respondents were critical of national news coverage of general scientific topics. Perceptions of each descriptor set were generally negative. The mean for each response scale item is provided in Table 8.

Table 8

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in National News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **national** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 3.23 | .824 |
| Balanced (1), Unbalanced (5) | 61 | 3.46 | .848 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.43 | .884 |
| Accurate (1), Inaccurate (5) | 61 | 3.34 | .929 |
| Biased (1), Unbiased (5) | 61 | 2.39 | .954 |

*Descriptor word sets were on a five-point scale.

Finally, respondents were asked to provide their perception of general scientific topic coverage in agricultural news media. Respondents' perceptions of story coverage were positive in each category. The mean for each response scale item is provided in Table 9.

Table 9

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in Agricultural News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **agricultural** news media are: | | | |
| *Fair (1), Unfair (5) | 59 | 2.46 | .897 |
| Balanced (1), Unbalanced (5) | 60 | 2.60 | .827 |
| Trustworthy (1), Untrustworthy (5) | 59 | 2.47 | .897 |
| Accurate (1), Inaccurate (5) | 60 | 2.50 | .792 |
| Biased (1), Unbiased (5) | 59 | 3.05 | 1.090 |

*Descriptor word sets were on a five-point scale.

## Discussion and Conclusions

In general, the members of the Southern Association of Agricultural Scientists who participated in this study had been employed in universities for several years, as indicated by their academic rank, were male, and were more representative of the physical and biological sciences (agronomy, animal science, biochemistry, horticulture, plant pathology, soil and water conservation), than the social sciences (agricultural communications, agricultural economics, agricultural education, rural sociology). A limitation of the study was the relatively low response rate, especially in the social science fields, which limits the generalizability of these findings. This may be due to individuals in these fields not seeing themselves as scientists, but more as academics and researchers. If so, this represents an interesting potential area for future research.

Respondents' answers tended to fall in the middle of the five-point Likert-type scale on most of the descriptor sets (fair/unfair, biased/unbiased, trustworthy/untrustworthy, accurate/inaccurate, and balanced/unbalanced). However, the tendency was to be more negative than positive. Respondents were more negative of all news coverage and national news coverage of general scientific topics and topics from

their agricultural disciplines, but more positive about local news and agricultural news coverage of science and agricultural stories. They were most favorably disposed toward agricultural news coverage and least favorably disposed toward national news media coverage. A possible reason for the favorable perception of agricultural news coverage is that they may believe agricultural news reporters are generally knowledgeable about their disciplines and, thus, can ask the right questions and present the information in such a way as to get the facts correct.

As for the positive perception of local news coverage of scientific and agricultural stories, agricultural scientists may believe that the proximity of local reporters may allow scientists some "control" over the story because reporters can spend more time with scientists and follow up with them with questions. The negative tendency toward national news may be that agricultural scientists see the national news as only printing or broadcasting bad or unfavorable news about any topic; they then translate that into national news outlets reporting bad news about general scientific or agricultural topics. They also may have seen previous stories where national news reporters did a poor job of reporting the facts on complex scientific topics.

Respondents were more favorable in their perceptions of general science coverage than of stories in their agricultural discipline. This may be because respondents have more knowledge of agricultural topics and, therefore, can be more critical of the content of agricultural discipline-specific stories. Respondents were more apt to perceive stories negatively in the biased/unbiased descriptor set than in the four other descriptor sets. They also were more apt to perceive stories positively in the fair/unfair set than in the other sets.

Overall, results indicate that agricultural scientists have neutral to negative perceptions of all news media and national news media. They are more positive about local and agricultural news media. These perceptions could help media relations professionals design and develop workshops to help agricultural scientists work with reporters. If most of the agricultural scientists' interactions will be with agricultural or local reporters, media relations workshops could be designed to strengthen the perceptions scientists already have of these two news media types. Training workshops also could be tailored to help scientists develop messages that could be more positively presented in national news media.

## References


Dillman, D. A. (1999). *Mail and Internet surveys: The tailored design method, Second Edition.* New York: John Wiley and Sons.

Gascoigne, T., & Metcalfe, J. (1997). *Incentives and impediments to scientists communicating through the media.* Retrieved February 12, 2003, from http://www.usyd.edu.au/su/fasts/1997/GascoigneMetcalfe.html.

Hartz, J., & Chappell, R. (1997). *Worlds apart.* Tennessee: First Amendment Center.

Malone, R. E., Boyd, E., & Bero, L. A. (2000). Science in the news: Journalists' constructions of passive smoking as a social problem. *Social Studies of Science,* 30(5), 713-735.

Nelkin, Dorothy. (1995). *Selling science: How the press covers science and technology.* New York: W. H. Freeman.

Southern Association of Agricultural Scientists. (2002). *Introduction to the Southern Association of Agricultural Scientists.* Retrieved November 15, 2002, from http://cals.agnis.vt.edu/~saas/navigator/intro.html.

Stringer, S., & Thomson, J. (1999, June 12-16). *Defining agricultural issues: Daily newspapers editors' perspectives*. Paper presented at Agricultural Communicators in Education/National Extension Technology Conference, Knoxville, Tennessee.

# Master's Level Agricultural Communications Curriculum: A National Delphi Study

Leslie A. Simon
Graduate Student, Texas Tech University

Dr. Jacqui D. Haygood
English Teacher, Canadian Independent School District

Dr. Cindy L. Akers
Assistant Professor, Texas Tech University
Cindy.akers@ttu.edu

Dr. David L. Doerfert
Associate Professor, Texas Tech University
David.doerfert@ttu.edu

Dr. Chad S. Davis
Assistant Professor, Texas Tech University
Chad.S.Davis@ttu.edu

Susie J. R. Bullock
Instructor, Texas Tech University
Susie.bullock@ttu.edu

# Master's Level Agricultural Communications Curriculum: A National Delphi Study


## Abstract

The major purpose of this study was to identify what topics and curricular areas a master's level agricultural communications curriculum should include. Identification of the topic and curricular areas came from industry representatives and university faculty.

A three-round Delphi technique was the principle procedure used to conduct the study with a total of 30 individuals participating in round one. In the first round, the panel identified 23 topics that should be included in a master's level agricultural communications curriculum: (1) Advertising, (2) Electives Pertaining to Major, (3) Emerging Issues and Trends in Agriculture, (4) Emerging Technology, (5) Graphic Design, (6) History and Philosophy, (7) Internship, (8) Legislative Issues, (9) Management, (10) Marketing, (11) Mass Communications, (12) Photography, (13) Professional Seminars, (14) Public Relations, (15) Publications, (16) Research, (17) Risk Communications, (18) Speech Communication, (19) Overview Courses, (20) Thesis, (21) Video and Broadcast, (22) Web Classes, and (23) Writing.

Resulting rounds produced 90 curricular areas within the 23 topic areas that were identified as potential material in a master's curriculum.



**Keywords:** Delphi, Curriculum, Master's Program, and Agricultural Communications

## Introduction

Master's graduates have emerged from programs as more enlightened critical thinkers equipped with enhanced communication and teamwork skills (The Changing Landscape, 2001). Some people in the past have concluded that master's programs are the forgotten middle child of higher academia. "Despite being relegated by some of the educators… (it is)… concluded that master's education in the United States has been a silent success – for degree holders, employers, and society in general" (Conrad, Haworth, & Millar, 1993, p. 315).

A master's level education offers a combination of research and coursework at a higher level than a bachelor's degree. It offers more in-depth knowledge of training, with increased specialization and intensity of instruction. Students at this level become more self-directed and more successful in the branch of knowledge which they wish to learn (www.y-axis.com, 2003). However, not all universities offer all programs at the master's level.

The overwhelming lack of knowledge about agriculture on the part of the general public blended with the development of a business oriented industry in agriculture has produced a great interest and need for universities to include agricultural communications curriculum in the traditional agricultural education programs (Birkenholz & Craven, 1996). Universities offering agricultural programs have long had the traditional classes which offer skills needed in order to sustain land, teach agriculture, and preserve wildlife. However, with the growing technology of our times, communications is a very important skill for new graduates to possess (Bailey-Evans, 1994).

Technology exists all around us, leaving us almost helpless in today's society without it. New communication media have even changed the thoughts and ideas of people pertaining to agricultural fields. Satellite transmissions, video conferencing, the World Wide Web,

videography, digital photography as well as many more, either not mentioned or still in development, are used in the most basic agricultural professions or tasks, most dating back from a century ago. Are university students at the master's level learning all that they can to put them ahead when the time comes for their professional careers? (Bailey-Evans, 1994)

"The aggressive changes in technology indicate a pressing need to examine the curriculum in an effort to make it applicable to students and their future employers" (Bailey-Evans, 1994, p. 1). Technology, changing every day, is harder than ever to keep up with; however, it is the responsibility of higher education to observe and keep pace with the ever-changing technological advances for the preparation and learned skills to produce high quality graduates. This is not a task that can be completed only by observing the processes and methods of the current agricultural communications students, but is a process that will have to refer to those who have already completed and are using this level of coursework. Agricultural communications programs should frequently review the status of their graduates in order to more effectively determine the merit within the existing curriculum (Akers, 2000).

Many studies have shown that there is not one perfect group to survey for this problem. The curriculum revision process should be a collaborative effort between students directly involved with the studies in question, teachers who both teach the skills and administer the curriculum standards, and professionals who use these certain skills (Wrye, 1992).

Therefore, an in-depth assessment of the present curricular offerings is a necessary base for an effective curriculum revision (Larson & Hoilberg, 1987; Sledge et al., 1987; Kroupa & Evans, 1976). If universities are going to provide a degree program to students, faculty members must assess and provide for the needs of every student through the agricultural communications

curriculum and equip them with the knowledge needed to sustain employment upon completion of the requirements of a master's degree.

## Purpose and Research Questions

The purpose of this study was to identify the areas of study that should be included in an agricultural communications master's degree program. The study also determined how each identified area of study should be structured instructionally. This information was collected through the input of professionals in the agricultural communications field as well as university faculty. In order to develop the most thorough curriculum, the following questions were developed: (1) Upon completion of the agricultural communications master's program, what skills or competencies should students have to succeed in their chosen agricultural communications field as perceived by industry professionals and agricultural communications professors? (2) What specific courses or topics should be included in an agricultural communications curriculum?

## Methodology

To conduct this study, the Delphi technique was used to get the most comprehensive results. This method is used in order to develop a consensus within a group of people on a particular issue without bringing the subjects in personal contact with each other (Akers, 2000). Linstone and Turnoff (1975) stated "the Delphi technique may be characterized as a method for structuring a group so that the process is effective in allowing a group of individualists as a whole, to deal with complex problems" (p. 13).

The panel of experts used in this survey consisted of people that are in some way affiliated with the teaching or profession of agricultural communications. The industry professionals used were executive officers of six agricultural communications-related

professional organizations. The six organizations were: (1) Agricultural Communicators of Tomorrow (ACT), (2) Agricultural Communicators in Education (ACE), (3) American Agricultural Editors' Association (AAEA), (4) Cooperative Communicators Association (CCA), (5) Livestock Publication Council (LPC), and (6) National Association of Farm Broadcasters (NAFB).

The second subgroup consisted of faculty members from major universities across the United States who currently teach agricultural communications either at the undergraduate and/or graduate level. The individuals who were selected and agreed to participate in the study included faculty members from (1) Texas Tech University, (2) Oklahoma State University, (3) Texas A&M University, (4) University of Arizona, (5) Clemson University, (6) University of Arkansas, (7) California Poly University at San Luis Obispo, (8) University of Florida, and (9) Kansas State University.

Each panel member was contacted with an explanation of the purpose of the study. The panel members were given the opportunity to refuse participation. The panel members were given a choice on the delivery method they would like to receive the surveys. All panel members chose electronic email. The two subgroups consisted of 30 people total at the beginning of the study, 15 professionals and 15 faculty members.

From the reviewed literature, an open-ended questionnaire consisting of one question was developed for Round One. The question was validated by a panel of faculty and industry professionals not included in the panel of experts. The instrument was pilot tested using individuals that are part of the target population, but not part of the sample population.

The study participants were asked to list several answers to the question. Frequencies, percentages, and rankings were used to summarize the responses to this round. Three

independent readers completed this technique on the first round responses. The three readers then collapsed similar responses. One hundred percent response was received in this round.

In Round Two, the panel of experts was presented with a Web-based instrument which asked them to do three things: (1) rate the 25 main areas of study that emerged from Round One in terms of appropriateness for a master's in agricultural communications curriculum, and (2) rate the 131 curricular areas that emerged from Round One in terms of appropriateness for a master's in agricultural communications curriculum. The panel was asked to rate each curricular area using a four–point Likert-type scale with 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Agree," and 4 = "Strongly Agree." The scale was used to determine each panel member's level of agreement as to the inclusion of the curricular area or topic in a master's program in agricultural communications. The researchers determined *a priori* those areas receiving 80% level of agreement or higher would be used in a master's program in agricultural communications. In addition to evaluating the 131 curricular areas and 25 main areas the panel members were asked to list additional areas missed in Round One.

The researchers utilized Dillman's Tailored Design Method (2000) to solicit response. Twenty-eight of the panel members responded for a 93% response rate. Two of the industry representatives contacted the researcher and removed themselves from the panel. Frequencies, percentages, and ranks were used to evaluate the second round responses.

Round Three served as the final round for the study. There were no items added on the other section in Round Two, so only the 31 curricular areas that did not receive the 80% level of agreement in round two remained in round three. The 28 remaining panel members responded to round three for a 93% response rate. Frequencies, percentages, and rankings were used to evaluate the third round responses.

## Findings

The open-ended question regarding what content should be included in the ideal master's level agricultural communications curriculum produced 121curricular areas one or more of the panelists agreed should be included at the master's level. Of these areas the researchers found the following 25 main areas of study: (1) Advertising, (2) Education/Teaching, (3) Electives Pertaining to Major, (4) Emerging Issues and Trends in Agriculture, (5) Emerging Technology, (6) Graphic Design, (7) History and Philosophy, (8) Internship, (9) Legislative Issues, (10) Leveling Courses, (11) Management, (12) Marketing, (13) Mass Communications, (14) Photography, (15) Professional Seminars, (16) Public Relations, (17) Publications, (18) Research, (19) Risk Communications, (20) Speech Communication, (21) Overview Courses, (22) Thesis, (23) Video and Broadcast, (24) Web Classes, and (25) Writing.

Twenty-three of the 25 topic areas and 76 of the 121 curricular areas were identified by the panel of experts as necessary in a master's of agricultural communications program. Those topics and curricular areas that met the 80% level of agreement in round two are listed in Table 1.

Table 1
*Topic areas and curricular areas that met the 80% level of agreement in round two.*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Advertising** | | **85.8** |
| | Advertising | 85.7 |
| **Electives Regarding Major** | | **100.0** |
| **Emerging Issues and Trends in Agriculture** | | **95.7** |
| | Biotechnology Issues | 92.6 |
| | Environmental Issues | 92.6 |
| | Health & Food Safety Issues | 92.5 |
| | Rural Issues | 88.9 |
| **Emerging Technology** | | **95.6** |
| | Technologies of Change | 89.3 |

Table 1 *continued.*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Graphic Design** | | **96.1** |
| | Elements of Design | 100.0 |
| | Applications (Photoshop, Illustrator, Advanced Design, Desktop Publishing, Quark, PageMaker) | 85.2 |
| **History/Philosophy** | | **91.3** |
| | Communications Role in Agriculture | 96.4 |
| | Agricultural Communications Philosophy | 85.8 |
| | Agricultural Communications History | 85.7 |
| | Agriculture and the Public | 82.2 |
| **Internships** | | **82.2** |
| **Legislative Issues** | | **93.1** |
| | Communications Related | 96.4 |
| | Agriculturally Related | 85.7 |
| **Management** | | **91.7** |
| | Project Management | 100.0 |
| | Media Management | 100.0 |
| | Information Management and Evaluation | 100.0 |
| | Crisis Management | 100.0 |
| | Basic Management | 95.7 |
| | Budgeting in Communications | 92.9 |
| | Fiscal | 92.6 |
| | Issues in Management | 85.7 |
| | Personnel Management | 83.3 |
| | Managing/Understanding Non-Profit, Commodity and Trade Associations | 82.2 |
| | Development Strategies | 82.1 |

Table 1 *continued*

| Topic Area | Curricular Area | Round 2<br>% of Agreement* |
|---|---|---|
| **Marketing** | | **95.8** |
| | Marketing | 100.0 |
| | Social Marketing | 85.7 |
| **Mass Communications** | | **100.0** |
| | Communications Law | 100.0 |
| | Effective Communications Skills | 92.3 |
| | Current Issues | 92.3 |
| | Public Opinions | 88.4 |
| | International Relations/Experience | 80.7 |
| **Photography** | | **83.4** |
| **Professional Seminars** | | **96.2** |
| **Public Relations** | | **100.0** |
| | Strategic Communications Planning | 100.0 |
| | Advanced Media Campaign | 96.2 |
| | Media Relations | 96.0 |
| | Public Relations | 96.0 |
| | Qualifying/Quantifying Public Relations and Advertising Departments | 88.5 |
| | Psychology of Public Relations | 88.4 |
| | Campaign Strategies | 84.0 |
| **Publications** | | **92.0** |
| | Audience Analysis | 88.5 |
| | Advanced Publications | 92.3 |
| **Research** | | **92.0** |
| | Analyzing Statistical Data | 96.2 |
| | Media Analysis | 92.3 |
| | Research Methods (Qualitative and Quantitative) | 92.3 |

Table1. *continued*

| Topic Area | Curricular Area | Round 2<br>% of Agreement* |
|---|---|---|
| | Consumer Attitude Research | 88.5 |
| | Evaluation of Communications Programs | 88.5 |
| | Agricultural Communications Research | 88.4 |
| | Statistics | 84.7 |
| | Communications Based Statistics | 84.6 |
| **Risk Communications** | | **92.0** |
| | Risk Communications | 92.3 |
| | Creating a Crisis Communication Plan | 84.7 |
| **Speech Communications** | | **80.0** |
| | Effective Presentations | 88.5 |
| **Overview** | | **91.3** |
| | Case Studies in Communications | 96.2 |
| | Ethics | 96.1 |
| | New Media Theory and Applications | 84.6 |
| | Logic | 84.5 |
| | Communications Theory | 80.8 |
| | Changing Roles of Communications Due to Different Media | 80.8 |
| | Diffusion and Innovations of New Technology | 80.8 |
| | Multiculturalism | 80.7 |
| **Thesis** | | **88.5** |
| **Video/Broadcast** | | **91.7** |
| | Video Production | 92.0 |
| | Digital Editing | 92.0 |
| | Writing for Broadcast | 88.0 |

Table 1 *continued*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Web Classes** | | **92.0** |
| | Web Management | 96.1 |
| | The Internets Role in Communications | 96.0 |
| | Applications for the Web | 84.6 |
| **Writing** | | **100.0** |
| | Technical Writing | 96.2 |
| | Advanced Writing | 96.1 |
| | Advanced Reporting | 92.3 |
| | Editing | 92.3 |
| | Technologies Application to Journalism | 84.7 |
| | Print Media | 84.6 |
| | Reporting | 84.6 |
| | Writing for all Audiences | 84.6 |
| | Journalism | 80.0 |

*The percentage of individuals who responded with either 3 (Agree) or 4 (Strongly Agree) combined.

Thirty-one items did not reach the 80% level of agreement in round two. Upon second review the panel of experts identified 14 of curricular areas and 1 topic areas as necessary in a master's of agricultural communications curriculum. The 34 items and their level of agreement in Rounds 2 and 3 are listed in Table 2.

Table 2
*Topics and curricular areas that did not meet the 80% agreement and went to round three*

| Topic Area | Curricular Area | Round 2 % of Agreement | Round 3 % of Agreement |
|---|---|---|---|
| **Advertising** | Public Management of Advertising | 75.0 | 78.5 |
| **Education and Teaching** | | **73.1** | **66.7** |
| | Teaching Methods | 71.4 | 60.8 |
| | Distance Education | 59.2 | 60.7 |
| | Student Teaching | 25.0 | 25.0 |
| **Emerging Technology** | GPS in Agricultural Communications | 50.0 | 60.7 |
| **History/Philosophy** | History of Land Grant Universities | 62.9 | 64.3 |
| **Legislative Issues** | Overview Courses | 75.0 | 89.3* |
| **Leveling Courses** | | **76.2** | **73.1** |
| **Management** | Personal Development Management | 75.0 | 65.4 |
| | Financial Analysis | 75.0 | 75.0 |
| | Association Management | 75.0 | 78.6 |
| **Marketing** | Sales | 75.0 | 78.6 |
| | Promotion of Educational Institutions and Programs | 67.8 | 71.4 |
| **Mass Communications** | Mass Media Class | 73.1 | 85.1* |
| **Overview** | Effective Communications Processes | 76.9 | 96.4* |
| | Creativity Training | 76.9 | 89.3* |
| | Leadership | 76.9 | 70.3 |
| | Impact our ability to transmit information worldwide had on communications | 73.1 | 75.0 |

Table 2 *continued*

| Topic Area | Curricular Area | Round 2 % of Agreement | Round 3 % of Agreement |
|---|---|---|---|
| **Photography** | Digital Photography's Role in Communications | 77.0 | 92.8* |
| | Photography | 76.9 | 92.9* |
| **Publications** | Commercial Printing | 76.9 | 73.0 |
| **Research** | Research and Academics | 73.1 | 75.0 |
| **Speech Communications** | Oral Communications | 73.1 | 82.1* |
| | Audiovisual Material | 72.0 | 82.1* |
| | Non-Verbal Communications | 69.3 | 82.1* |
| **Video Broadcast** | Role of Broadcasting | 76.0 | 92.9* |
| | Role of Television | 73.0 | 89.3* |
| | Radio Production | 72.0 | 67.8 |
| | Video's Role in communications | 69.2 | 85.7* |
| **Web Classes** | Writing for emerging media | 77.0 | 96.3* |
| **Writing** | Writing and developing grants | 76.9 | 82.1* |
| | Scholarly Writing | 73.1 | 77.7 |

*The percentage of individuals who responded with either 3 (Agree) or 4 (Strongly Agree) Combined.

## Conclusions and Recommendations

Topic areas that have been included are only those with 80% agreement from the panel members. The following topic areas should be used when designing an agricultural communications curriculum. Of these areas the researchers found the following 23 main areas of study: (1) Advertising, (2) Electives Pertaining to Major, (3) Emerging Issues and Trends in Agriculture, (4) Emerging Technology, (5) Graphic Design, (6) History and Philosophy, (7)

Internship, (8) Legislative Issues, (9) Management, (10) Marketing, (11) Mass Communications, (12) Photography, (13) Professional Seminars, (14) Public Relations, (15) Publications, (16) Research, (17) Risk Communications, (18) Speech Communication, (19) Overview Courses, (20) Thesis, (21) Video and Broadcast, (22) Web Classes, and (23) Writing.

Ninety curricular areas were identified as necessary components of a master's of agricultural communications program. Those areas are found in Tables 1 and 2.

The following recommendations were made based on the findings and conclusions of this study.

- Additional studies should be conducted to further review the competencies and to determine if any further changes are needed in the curriculum.
- A feasibility study should be conducted to determine what a university needs, including, but not limited to, faculty and yearly resources, to deliver a master's program effectively and efficiently.
- A study should be conducted to measure the level of agreement of the various segments of the panel such as faculty compared to the industry leaders to understand if the perceived needs of each group correlate with the other segments of panel members.
- A market analysis should be conducted to understand the need of the program, delivery strategy and value to the individuals and organizations related to agricultural communications.
- Other stakeholders of agricultural communications should be surveyed. According to Tyler (1969) this includes future, present, and past students, faculty and staff of universities, community members, and administrative officials.

- A study should be conducted to determine the social and cultural benefits as well as the emotional intelligence benefits of an advanced degree.
- Curriculum at any level should be reviewed and revised every year to keep up with current changes of technology.
- The concept of curriculum centers should be explored. The center could focus on news reporting, feature reporting, and news management and include intensive training in reporting, writing and editing, while developing speed, clarity and accuracy.
- Based on this study, the researchers suggests that the following courses could be taught in an agricultural communications master's curriculum:
    - Advanced Methods in Agricultural Communications (3)–Students will learn about the latest research and principles in agricultural communications covering aspects of advertising, communications law, effective communications skills, current issues and trends in communications, consumer research, mass media technologies, and international relations.
    - Advanced Writing Techniques (3)–Students will work on the development of their own authentic writing voices focusing on the skills behind powerful reporting and writing and effective editing. Practical approaches and successful methods used by communicators and journalists will be the basis for the course with special emphasis on voice, storytelling, deadline writing, ethical decision-making, and covering diverse communities.
    - Contemporary Issues in Agricultural Communications (3)–Students will learn and discuss the agriculture and communication industry trends and issues that are having an impact on the agricultural communications profession.

- Data Analysis (3)–This course will focus on the proper use of common quantitative and qualitative data analysis techniques and the interpretation of the research results.
- Electives Regarding Major (0-3)–Students may complete up to three hours in any college on topics relating to their specialization in agricultural communications.
- Electronic Information Dissemination (3)–Students will learn about emerging technology and technologies of change. They will also learn about Web design theory and application including Web management, the Internet's role in communications, audiovisual materials, writing for emerging media, and applications for the Web.
- History, Philosophy and Policy of Agricultural Communications (3)–This course includes an overview of the theory of communications, the role of agricultural communications in the agriculture industry, agricultural communication history and philosophy, agriculture and the public and legislative issues dealing with communications and agriculture.
- Internship/Practicum (3)–Students are offered the opportunity to become highly proficient in areas of sub-specialization within the agricultural communications profession. Students will be expected to complete a final project and presentation as well as attend 12 hours of professional seminars.
- Marketing and Public Relations (3)–Course includes the theory and applications used in marketing and public relations efforts including social marketing, media relations, qualifying/quantifying public relations and advertising departments, psychology of public relations, and campaign strategies.

- Print Based Media Production (3)–Students will determine what the world of magazine readers needs, and they will deliver it. Students will assume staff positions – research, advertising, circulation, design, publishing, online, technology, promotions and, of course, editorial – and build the publication from the ground up. The result is not just a prototype but also a whole entrepreneurial package, including budget and circulation projections, an advertising campaign and a five-year business plan.
- Project and Media Management (3)–Dramatic changes in technology and the media's role in converging technologies requires new management and leadership techniques. Students will study the theory, tools and techniques being used to manage successfully in today's complex agricultural communications profession.
- Research Methods–Emphasis on understanding common quantitative and qualitative research methods and tools.
- Risk and Crisis Communications (3)–Students learn about the latest research and principles of crisis communications, risk communications, communications strategies, crisis management, and evaluating overall campaign effectiveness.
- Seminars (2)–Problems, issues and approaches to agricultural communications in selected topic areas. Specific content will vary but could include consumer attitude research and evaluation, writing and developing grants, managing and understanding non-profit organizations, and commodity and trade associations.
- Statistics (3)–Emphasis on analysis of research data utilizing descriptive and inferential statistical techniques.

- Thesis (6)–Hours to complete a thesis. If the non-thesis option is chosen, the student must substitute 6 hours to replace the thesis.
- Video Based Media Production (3) – Students will gain the practical, creative, and communication skills necessary for delivering messages and communication tasks with video in corporate, governmental, and organizational settings.

- Based on the previous courses, two 36-hour curricula should be used as a potential agricultural communications master's program. The two options are thesis and non-thesis (Table 3 and 4).

Table 3.
*Developed curriculum plans from results of study thesis option*

| **THESIS OPTION** | **HOURS** |
|---|---|
| **Agricultural Communications Core** | **11** |
| Research Methods | 3 |
| History, Philosophy & Policy of Agricultural Communications | 3 |
| Seminar (2 semesters) | 2 |
| Statistics | 3 |
| **Thesis** | **6** |
| | |
| **Agricultural Communications Courses** (Choose from the Following) | **16-19** |
| Advanced Methods in Agricultural Communications | 3 |
| Advanced Writing Techniques | 3 |
| Data Analysis | 3 |
| Contemporary Issues in Agricultural Communications | 3 |
| Electronic Information Dissemination | 3 |
| Marketing and Public Relations | 3 |
| Print Based Media Production | 3 |
| Project and Media Management | 3 |
| Risk and Crisis Communication | 3 |
| Video Based Media Production | 3 |
| **Electives** | **0-3** |
| | |
| **TOTAL HOURS** | **36** |

Table 4.
*Developed curriculum plans from results of study non-thesis option*

| NON-THESIS OPTION | HOURS |
|---|---|
| **Agricultural Communications Core** | **11** |
| Research Methods | 3 |
| History, Philosophy & Policy of Agricultural Communications | 3 |
| Seminar (2 semesters) | 2 |
| Statistics | 3 |
| **Practicum or Internship** | **3-6** |
| **Agricultural Communications Courses** (Choose from the Following) | **16-19** |
| Advanced Methods in Agricultural Communications | 3 |
| Advanced Writing Techniques | 3 |
| Data Analysis | 3 |
| Contemporary Issues in Agricultural Communications | 3 |
| Electronic Information Dissemination | 3 |
| Marketing and Public Relations | 3 |
| Print Based Media Production | 3 |
| Project and Media Management | 3 |
| Risk and Crisis Communication | 3 |
| Video Based Media Production | 3 |
| **Electives** | **0-6** |
| **TOTAL HOURS** | **36** |

## REFERENCES


Akers, C.W. (2000). *High school agricultural communications competencies: A national Delphi study.* Unpublished doctoral dissertation, Texas Tech University, Lubbock.

Bailey-Evans, F. (1994). *Enhancing the agricultural communications curriculum: A national Delphi study.* Unpublished master's thesis, Texas Tech University, Lubbock.

Birkenholz, R.J. & Craven, J. (1996). Agricultural communications – bridging the gap. *The Agricultural Education Magazine,* 68 (Suppl. 5), 10-11.

The changing landscape of master's education: implications for Penn State. (2001). Retrieved February 11, 2003, from http://www.gradsch.psu.edu/gradinit/pennstatetalk.pdf

Conrad, C., Haworth, J., Millar, S. (1993). *A silent success: Master's education in the United States.* Baltimore: The Johns Hopkins University Press.

Dillman, D.A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York, NY: Wiley & Sons.

Kroupa, E. & Evans, J. (1976). Characteristics and course recommendations of agricultural communicators: An update. *ACE Quarterly*, January-March 1976.

Larson, K.L, & Hoilberg, E.O. (1987). Current curricular designs: Strengths and weaknesses. E. Porath (Ed.), *Curricular Innovations for 2005: Planning for the Future of our Food and Agricultural Sciences.* Madison, WI: United States Department of Agriculture, North Central Region Curricular Committee.

Linstone, H.A., & Turoff, M. (1975). *The Delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.

Sledge, G.W., Darrow, E.E., Ellington, E.F., Erpelding, L.H., Hartung, T.E., & Riesch, K.W. (1987). Futuristic curricular models/designs for the food and agricultural sciences. In E. Porath (Ed.), *Curricular Innovations for 2005: Planning for the future of our food and agricultural sciences.* Madison, WI: United States Department of Agriculture, North Central Region Curricular Committee.

Wrye, C.L. (1992). *Occupational status and educational needs of the College of Agricultural Sciences graduates of Texas Tech University.* Unpublished master's thesis, Texas Tech University, Lubbock, TX.

http://www.y-axis.com/studyoverseas/usguide/gradedu.shtml

# Turf for Texans: Basic to Advanced Turfgrass Instructional Modules for the Texas Master Gardener Program

Chyrel A. Mayfield[1]

Gary J. Wingenbach[2]

David R. Chalmers[3]

Texas A&M University

Department of Agricultural Education

2116 TAMU

College Station, Texas 77843-2116

Phone: 979-862-1507

FAX: 979-845-6296

Email: cmayfield@aged.tamu.edu

g-wingenbach@tamu.edu

dchalmers@tamu.edu

**RESEARCH PAPER**

[1] Chyrel A. Mayfield is a graduate student and research assistant in the Department of Agricultural Education at Texas A&M University.
[2] Gary J. Wingenbach is an Assistant Professor of agricultural communications and journalism in the Department of Agricultural Education at Texas A&M University.
[3] David R. Chalmers is an Extension Turfgrass Specialist and Associate Professor in the Department of Soil and Crop Sciences at Texas A&M University.

Abstract

State budgets for extension programming continue to decline nationwide, despite rising demand for educational programs at the local level. Turfgrass specialists and extension educators responsible for developing educational materials in the Texas Master Gardener Program sought stakeholder input for an innovative curriculum by using innovative data collection methods. The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions (FAQs) in basic to advanced turfgrass management curricula for the *Turf for Texans* Master Gardener Program. A proportional stratified sample ($n$ = 66) of county agents, master gardener program coordinators, and volunteers from 11 Texas Cooperative Extension Service districts responded to this Web-based, modified Delphi study.

Participants identified, ranked, and rated 37 FAQs in the basic modules (Introduction to Texas Lawn Care, How Lawn Grasses Grow, and Grass Species and Varieties Adapted for Texas) and 42 FAQs in the advanced modules (Nutrient Management, Irrigation Matters in Texas, and Pests and Integrated Pest Management). Turfgrass specialists and extension educators used the prioritized information to further develop the *Turf for Texans* instructional modules.

Interactive, online data collection methods provided rapid feedback in the consensus-building process. In times of shrinking financial support for extension programming, agricultural communications professionals and county extension agents can use this methodology to develop similar consensus-building activities for other extension programming issues. Stakeholder input can be achieved, with minimum time and expense, while curriculum developers will not waste time developing materials that clientele will not find useful.

Keywords: Extension, Master Gardeners, FAQs, Delphi, CD-ROM Instructional Modules

## Introduction

Cooperative extension has a rich history of developing outreach programs that have a direct and relevant impact on stakeholders' lives. In order to develop relevant programming, clientele are asked for input during the development stages for many programs. Often, requesting and incorporating timely and relevant input to program curricula can be a time-consuming, expensive process. Decreasing state and federal resources are forcing extension personnel to seek alternative methods to continue their rich tradition of stakeholder input in the program curricula development processes.

Extension education programs have traditionally been offered in a workshop format. This format has allowed for direct interaction with participants, which fosters knowledge and experience exchanges that provide ideas for future workshops. Some drawbacks of the workshop format include the amount of time needed to complete the workshop and fiscal constraints placed on extension personnel.

## Conceptual Framework

The cooperative extension service uses various learning formats in delivering educational programs to extension clientele. These formats have included television, interactive satellite, and Web-based delivery methods.

Closed circuit television was the learning format used in Indiana to teach swine breeding to extension clientele. The topics included reproduction, housing, nutrition, and disease immunity. Closed circuit television sessions replaced county swine producer meetings. Results from pre- and post-tests to measure learning comprehension showed that participants' learning scores were increased by over 27% (Branson & Davis, 1985). This early study showed that

extension clientele were willing to learn, and did learn technical subject matter, using new educational technologies.

A program on weight control and exercise was delivered via cable television to 300 leaders from northeastern Minnesota (Sunnarborg, Bradley, & Haynes, 1988). A group of fifty experimental subjects were selected from the pre-registrants. A group of fifty control subjects were selected from previous extension program participants. The control group was not allowed to view the cable television program. A pre- and two post-tests were administered to the groups. A total of 25 control and 21 experimental subjects completed all the tests. The findings revealed that the experimental group increased their knowledge scores by 23%. The experimental group had a higher percentage of participants who followed a planned exercise plan after the program. Participants from each group did exercise three or more times a week and reduced their caloric intake. The results indicate that television could be used effectively to teach weight control and exercise issues to extension clientele.

Educational delivery methods and techniques have changed much since 1988. Researchers in Texas used interactive video, the Trans-Texas Videoconference Network, to produce a seven-hour Food Protection Management instructor training seminar in 1996. Dooley, Van Laanen, and Fletcher found that a majority of students (71.9%) felt the training at a distance was as effective as face-to-face training. Students recommended overwhelmingly (96.6%) that technology be used for future trainings. Students' self-reported knowledge levels also showed a substantial increase in knowledge of food protection management techniques. Students who reported their knowledge levels as "very knowledgeable," increased from 14.6% to 51.7%. Prior to the training session, those reporting little knowledge of the material was 21.4% of the population. No students reported they had "little knowledge" after the training. Although this

study used distance education techniques only, it can be concluded that this delivery method was successful in teaching food protection management techniques to students in Texas.

Researchers in Arizona compared students in a traditional sports nutrition workshop with students in a workshop taught using satellite television. Ricketts, Hoelsher-Day, Begeman, and Houtkooper (2001) reported no significant differences between groups in average scores on evaluation items. Their results further supported the idea that learning comprehension was not dependent on delivery format used to teach the subject.

A traditional water quality workshop was compared with a satellite broadcast in Pennsylvania. Swistock, Sharpe, and Dickison (2001) found the satellite program to be as effective as the traditional workshop. The workshop objective (at least 20% of workshop participants will test their water after the program) was met easily by both the traditional and satellite students. Researchers also measured how many attendees learned at least two new ideas in both formats. Results indicated that twice as many individuals in the satellite program learned two new ideas when compared to the traditional workshop format. Another finding revealed that the cost of the satellite program was 2.3 times less than the cost of the traditional workshop sessions. This study supports the idea that distance education formats can be as effective, and less expensive to deliver, as traditional face-to-face workshops.

Rost and VanDerZanden (2002) used a basic soils online learning module, developed for the Oregon State University Extension Service Master Gardener Program, to compare learning performances of two groups of extension clientele. One group of participants completed the online module in their homes, while the other group completed the module in a face-to-face classroom setting. Learning (knowledge gain scores) was evaluated using a pre-/post-test design. Rost and VanDerZanden found no significant differences in knowledge gained between the

groups. Their results indicated that educational delivery format was not a factor in learning comprehension.

Alternative methods for collecting stakeholder input to extension program curricula provide extension personnel with timely, relevant feedback during the curricula development process. One inexpensive alternative to holding several face-to-face or traditional postal mail surveys is achieved through the modified Delphi technique, using a Web-based medium.

The Delphi technique was developed by the Rand Corporation in the late 1950's as a forecasting methodology. Unlike the nominal group process, the Delphi does not require face-to-face participation. It is a "systematic solicitation and collation of judgments on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses" (Debecq, Van de Ven, & Gustafson, 1975, p. 10). The Delphi technique affords researchers an opportunity to collect large amounts of input over a wide geographic area. Delphi techniques incorporate expert panel members' opinions, value judgments, and agreement in the consensus-building process (Somers, Baker, & Isbell, 1984).

Decisions about which participants to invite to a Delphi should be considered carefully. Ludwig (1997) recommended:

> Randomly selecting participants is NOT acceptable. Instead, characteristics and qualifications of desirable respondents should be identified and a nomination process used to select participants. Because the group number will be small (12-15), the researcher needs to locate and target individuals who are "expert," have knowledge and experience to base their futuring activities upon, and are self-motivated. Delphi should

not be used with groups that have difficulty in reading or expressing themselves in written communication. (p. 2)

Ladner, Wingenbach, and Raven (2002) found Web-based and traditional paper-based survey methodologies were equally valid and reliable for social science research. A difference between the two groups resulted in the aggregate response rate. The Web-based group's response rate exceeded the traditional group, 72 to 7, within the first week of data collection. This study provides strong evidence for using Web-based surveying methods in social science research.

Previous studies have shown repeatedly that learning technical subject matter is not dependent upon the educational delivery system used to teach extension clientele. While closed circuit television and rapid Internet access may have limitations in rural households, the relatively low cost of computers with CD-ROM drives has not limited families from purchasing and using these technologies in their homes. No studies were found which tested the learning levels of participants using the CD-ROM format. However, prior to testing the CD learning format, it is important to be mindful of extension stakeholder input in developing the materials for CD-based instructional products. Decreasing state funds for extension programming have forced many states to seek alternative methods to continue providing quality educational programs for their clientele at the county level. Extension clientele input for developing instructional modules in the *Turf for Texans Master Gardener Program* was sought using innovative methods.

## Purpose and Objectives

The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions (FAQs) in basic to advanced turfgrass management curricula for the *Turf for Texans* Master Gardener Program. The following objectives guided this study.

1. Identify FAQs for three basic and three advanced turfgrass instructional modules in the *Turf for Texans* Master Gardener Program.
2. Rank the importance of the identified FAQs.
3. Rank participants' agreement levels of the identified FAQs for inclusion in the basic and advanced turfgrass instructional modules.

## Methods and Procedures

Descriptive survey methodology, with a modified Delphi technique, was used in this study. Web-based survey data collection methods (Ladner, Wingenbach, & Raven, 2002) were used after obtaining approval to conduct the study through the Texas A&M University Institutional Review Board (#2002-0276).

The target population ($N = 339$) consisted of all Texas county extension agents, program coordinators, and volunteers who participated in a Texas Master Gardener Program during 2003. A proportional stratified sample from 11 Texas Cooperative Extension Service districts was obtained by contacting two agents from each district, who in turn, chose at least one coordinator and one volunteer from their respective master gardener programs. All participants were sent formal letters requesting their participation in the study. The sample consisted of 22 agents, 22 program coordinators, and 22 volunteers ($n = 66$).

The first instrument consisted of open-ended questions designed to obtain a wide range of responses. Using their own master gardener experiences, county agents, coordinators, and

volunteers identified the top five FAQs for basic and advanced turfgrass management in each of six *Turf for Texans* instructional modules. The identified FAQs were used to develop content for the modules. Electronic mail reminders were sent to non-respondents to complete round one; all data were collected in three weeks. A total of 20 agents, 4 coordinators, and 12 volunteers ($n$ = 36) from 33 counties in the 11 districts responded to round one, resulting in a 55% response rate.

A Q-sort (Kerlinger, 1986) committee formulated the second instrument using participants' FAQs from round one data collection. A team of extension turfgrass specialists, graduate students, and agricultural education faculty members condensed and combined initial responses into statements without altering their original meanings. A panel of experts from the Departments of Soil and Crop Science and Agricultural Education reviewed the instrument for face validity.

In the second round of data collection, respondents were instructed to read each FAQ for each module and rate the level of importance (Likert-type scale: 1 = Not Important…4 = Very Important) for including the FAQ in its respective turfgrass instructional module. Electronic mail notices requesting participation in round two were sent to all 66 participants. A total of 16 agents, 7 coordinators, and 12 volunteers ($n$ = 35) responded, resulting in a 53% response rate. All data were collected in two weeks.

Upon conclusion of data collection in the second round, all statements were ranked according to their grand mean scores, sorted by level of importance, and posted in a third instrument on a secure Internet site. The third instrument allowed respondents to rate their agreement levels (Likert-type scale: 1 = Strongly Disagree…4 = Strongly Agree) with the importance levels for each FAQ in each turfgrass instructional module. Electronic mail notices requesting participation in round three were sent to all 66 participants. A total of 15 agents, 5

coordinators, and 10 volunteers ($n$ = 30) responded, resulting in a 46% response rate. All data were collected in 10 days.

Descriptive statistics were derived for each instructional module. ANOVA tests were used to determine significant differences among subgroups. Instrument reliability was assessed using Cronbach's alpha coefficient in rounds two and three. Module 1 (Introduction to Texas Lawn Care) resulted in a Cronbach's alpha of .83 in round two and .74 in round three. Module 2 (How Lawn Grasses Grow) had Cronbach's alphas of .82 and .89. Module 3 (Grass Species and Varieties Adapted for Texas) had Cronbach's alphas of .77 and .91. Module 7 (Nutrient Management) resulted in a Cronbach's alpha of .86 in round two and .91 in round three. Module 8 (Irrigation Matters in Texas) had Cronbach's alphas of .84 and .91. Module 9 (Pests and Integrated Pest Management) had Cronbach's alphas of .89 and .87.

## Findings

Due to space limitations, only results from the third (final) round of the modified Delphi are presented. Also, the basic and advanced modules were part of a larger study that included three "intermediate" modules, which are not presented in this paper.

Thirty-six respondents with Texas Master Gardener Program experiences ranging from less than one to over 20 years ($M$ = 4.73), identified the top five FAQs for turfgrass management in their Texas Master Gardener Programs. After eliminating duplicates, a total of 10 FAQs were identified for Module 1 (Introduction to Texas Lawn Care). Table 1 illustrates respondents' agreement levels for the 10 FAQs in Module 1 (Introduction to Texas Lawn Care). Results are sorted by descending grand means.

Table 1

*Descriptive Statistics: Introduction to Texas Lawn Care Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| What determines if a lawn is healthy? | 3.15 | 3.40 | 3.00 | 3.14 |
| Are there benefits of having turf in my landscape? | 3.08 | 3.40 | 3.00 | 3.11 |
| What are the environmental benefits of turf? | 3.00 | 3.40 | 3.00 | 3.07 |
| What are the different uses of turfgrass? | 3.00 | 3.20 | 3.10 | 3.07 |
| Are there different levels of lawn maintenance (low, medium, or high and which level should I use for my lawn? | 3.00 | 2.80 | 3.10 | 3.00 |
| What is the definition of a "good" lawn? | 3.08 | 2.80 | 2.80 | 2.93 |
| How can I get help taking care of my lawn? | 2.92 | 2.60 | 2.70 | 2.79 |
| What is the value of the turfgrass industry: growers, retailers, maintenance? | 2.85 | 2.60 | 2.80 | 2.79 |
| What is the basic terminology used in lawn care? | 2.85 | 2.60 | 2.78 | 2.78 |
| What are the good things about having a lawn? | 2.69 | 2.60 | 2.70 | 2.68 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

The consensus-building process of this modified Delphi technique was useful in helping respondents prioritize the most important FAQs in the Introduction to Texas Lawn Care instructional module. Overall, the FAQ deemed most important in round two [*Are there different levels of lawn maintenance (low, medium, or high); which level should I use for my lawn?*], dropped to fifth most important in the third round. The second (*what determines if a lawn is healthy*) and third (*are there benefits of having turf in my landscape*) most important FAQs in round two became the first and second most important in round three. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module.

A slightly similar situation occurred between rounds when respondents rated their agreement levels of the FAQs for Module 2 (How Lawn Grasses Grow). The two most important FAQs in round two (*what techniques can I use to plant grass* and *what are the differences*

*between warm and cool season grasses*) switched positions of importance in round three (Table 2). Although their overall agreement increased for the FAQ concerning *keeping a lawn green all winter*, respondents were least concerned about this FAQ in round three. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module. Results are sorted by descending grand means.

Table 2

*Descriptive Statistics: How Lawn Grasses Grow Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| What are the differences between warm and cool season grasses? | 3.21 | 3.40 | 3.40 | 3.31 |
| What techniques can I use to plant grass? | 3.29 | 3.20 | 3.30 | 3.28 |
| Why do you sod some grasses and others you seed? | 3.15 | 3.60 | 3.20 | 3.25 |
| Why is leaf area important for growth? | 3.07 | 3.00 | 3.30 | 3.14 |
| What conditions are necessary for healthy stem growth? | 3.00 | 3.00 | 3.40 | 3.14 |
| What temperatures are best for root and shoot growth? | 3.14 | 3.40 | 3.00 | 3.14 |
| How do turfgrass roots grow? | 3.07 | 3.20 | 3.00 | 3.07 |
| Are there differences in how turfgrass grows, compared to other landscape plants? | 2.93 | 3.00 | 3.00 | 2.97 |
| Where is the growing point on grass? | 2.93 | 3.00 | 3.00 | 2.97 |
| What conditions induce dormancy in turfgrass? | 3.07 | 2.75 | 2.90 | 2.96 |
| What is the difference between a stolon, a rhizome, and a tiller? | 3.00 | 2.60 | 2.90 | 2.90 |
| Which grass produces the least amount of seed heads? | 3.00 | 3.00 | 2.70 | 2.90 |
| What is the anatomy of lawn grass? | 2.93 | 2.40 | 2.90 | 2.83 |
| How can I keep my lawn green all winter? | 2.86 | 2.80 | 2.70 | 2.79 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

Only the FAQs identified in the third basic turfgrass management instructional module (Grass Species and Varieties Adapted for Texas) had some consistency between the second and third rounds of this modified Delphi study (Table 3). The FAQ, "*what factors should be*

*considered when selecting a lawn grass*," was rated most important in both rounds. The *most economical grass to grow* and *having several grass species in one yard* were the two FAQs ranked lowest in the third round, except they switched positions. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module. Results in Table 3 are sorted by descending grand means.

Table 3

*Descriptive Statistics: Grass Species and Varieties Adapted for Texas Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| What factors should be considered when selecting a lawn grass? | 3.47 | 3.60 | 3.40 | 3.47 |
| How do I decide which grass is best suited for my area? | 3.47 | 3.60 | 3.40 | 3.47 |
| Which grass variety is best suited for me in my area of Texas? | 3.41 | 3.80 | 3.40 | 3.47 |
| What is the most drought-tolerant turfgrass? | 3.29 | 3.80 | 3.60 | 3.47 |
| What is the best turfgrass for shaded areas? | 3.35 | 3.60 | 3.50 | 3.44 |
| Which turfgrass will tolerate heavy traffic? | 3.35 | 3.40 | 3.60 | 3.44 |
| What is the best turfgrass for sunny areas? | 3.29 | 3.40 | 3.50 | 3.38 |
| What are the grass species and their areas of adaptability? | 3.24 | 3.40 | 3.30 | 3.28 |
| What is the best grass for my lawn? | 3.24 | 3.40 | 3.20 | 3.25 |
| What is the most cold-tolerant turfgrass? | 3.06 | 3.00 | 3.10 | 3.06 |
| Are there differences between varieties within species of turfgrasses? | 3.00 | 3.20 | 3.00 | 3.03 |
| Is it okay to have several grasses in one yard? | 3.06 | 3.20 | 2.90 | 3.03 |
| What is the most economical grass to grow? | 3.00 | 2.80 | 3.10 | 3.00 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

In the "advanced" Nutrient Management instructional module, the top two FAQs from round two (*when to fertilize* and *how often to fertilize*) remained the same for round three. Table 4 illustrates respondents' agreement levels for the 15 FAQs in Module 7 (Nutrient Management).

No significant differences were found among respondents' agreement levels of the FAQs identified in the Nutrient Management instructional module. Results are sorted by descending grand means.

Table 4

*Descriptive Statistics: Nutrient Management Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| When do I need to fertilize? | 3.47 | 3.80 | 3.70 | 3.60 |
| How often should I fertilize? | 3.47 | 3.80 | 3.60 | 3.57 |
| How much fertilizer should I apply? | 3.47 | 3.60 | 3.70 | 3.57 |
| What do the numbers on the fertilizer bag mean? | 3.40 | 3.20 | 3.80 | 3.50 |
| Can I use a "weed and feed" product? | 3.53 | 3.00 | 3.50 | 3.43 |
| What are some of the environmental concerns regarding fertilization? | 3.47 | 3.40 | 3.40 | 3.43 |
| What are the differences between pelletized, soluble, and slow release fertilizers? | 3.40 | 3.40 | 3.40 | 3.40 |
| Why is a soil test important? | 3.33 | 3.40 | 3.44 | 3.38 |
| How and where can I get my soil tested? | 3.27 | 3.20 | 3.67 | 3.38 |
| Are there any real differences between all those fertilizers at the garden center? | 3.40 | 3.40 | 3.30 | 3.37 |
| Should all the recommended amounts of nutrients be added at one time or divided into several applications? | 3.33 | 3.60 | 3.10 | 3.30 |
| What are the differences between organic and inorganic fertilizers? | 3.27 | 3.60 | 3.20 | 3.30 |
| If I fertilize more, I have to mow more often; what is a "happy" medium? | 3.13 | 3.20 | 3.00 | 3.10 |
| If I have old fertilizer, can I use it now instead of buying more? | 3.13 | 2.80 | 3.10 | 3.07 |
| What time of day should I apply fertilizer? | 2.93 | 3.00 | 3.00 | 2.97 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

A similar situation occurred between rounds when respondents rated their agreement levels of the FAQs for Module 8 (Irrigation Matters in Texas). The two most important FAQs in round two (*irrigation frequency* and *indicators that lawns need watering*) maintained their

relative importance during round three (Table 5). Again, no significant differences were found among respondents' agreement levels of the FAQs identified in the Irrigation Matters in Texas instructional module. Results are sorted by descending grand means.

Table 5

*Descriptive Statistics: Irrigation Matters in Texas Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| How often should I water my turfgrass? | 3.67 | 4.00 | 3.78 | 3.76 |
| What is a good indicator that my lawn needs watering? | 3.67 | 4.00 | 3.70 | 3.73 |
| How much water does my lawn need? | 3.60 | 3.80 | 3.70 | 3.67 |
| When should I water my lawn? | 3.60 | 3.80 | 3.60 | 3.63 |
| What are the signs of drought stress? | 3.53 | 3.80 | 3.70 | 3.63 |
| Water runs off my lawn while watering - Why? | 3.53 | 3.60 | 3.60 | 3.57 |
| Do trees in the landscape affect the amount of water required by turfgrass? | 3.60 | 3.80 | 3.30 | 3.53 |
| How do I determine "inches of water" per watering? | 3.60 | 3.20 | 3.60 | 3.53 |
| Should I water shady and sunny areas differently? | 3.40 | 3.60 | 3.30 | 3.40 |
| What is the best sprinkler system to use on turfgrass? | 3.47 | 3.40 | 3.30 | 3.40 |
| How deep should the moisture front be for adequate turf irrigation? | 3.47 | 3.40 | 3.30 | 3.40 |
| Does water quality (in different parts of Texas affect turfgrass? | 3.40 | 3.40 | 3.40 | 3.40 |
| Of loamy and sandy soils, which holds the most available water? | 3.07 | 3.60 | 3.44 | 3.28 |
| What is meant by uniformity of application? | 3.27 | 3.20 | 3.20 | 3.23 |
| How do I use the PET Network information to determine when to water? | 2.93 | 2.80 | 2.90 | 2.90 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

The FAQs identified in the third advanced turfgrass management instructional module (Pests and Integrated Pest Management) maintained some consistency between the second and third rounds of this modified Delphi study (Table 6). "*What common Texas turfgrass diseases might attack my lawn*" moved from third to first most important FAQ in round three; "*What*

*common Texas insects attack lawns*" dropped from first to second most important FAQ in this round. No significant differences were found among respondents' agreement levels of the FAQs identified in the Pests and Integrated Pest Management instructional module. Results in Table 6 are sorted by descending grand means.

Table 6

*Descriptive Statistics: Pests and Integrated Pest Management Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| What common Texas turfgrass diseases might attack my lawn? | 3.60 | 3.60 | 3.80 | 3.67 |
| What common Texas insects attack lawns? | 3.53 | 3.60 | 3.70 | 3.60 |
| How can I determine if I have a disease problem or an insect problem? | 3.53 | 3.60 | 3.60 | 3.57 |
| What is the difference between pre- and post-emergence weed control? | 3.33 | 3.40 | 3.80 | 3.50 |
| How do I control insects in my lawn? | 3.40 | 3.40 | 3.40 | 3.40 |
| Should I use a weed and feed or separate fertilizer and herbicide? | 3.27 | 3.60 | 3.50 | 3.40 |
| How do I prevent disease from attacking my lawn? | 3.27 | 3.40 | 3.50 | 3.37 |
| What is Integrated Pest Management (IPM)? | 3.27 | 3.40 | 3.40 | 3.33 |
| Should I spray my lawn to prevent diseases? | 3.33 | 3.20 | 3.20 | 3.27 |
| What are organic controls for different insects, diseases, and weeds that affect Texas turfgrass? | 3.27 | 3.40 | 3.20 | 3.27 |
| Is weed control in some turfgrasses more of a problem than in others? | 3.27 | 3.20 | 3.20 | 3.23 |
| Lawn bugs, weeds, and diseases overwhelm me; what can I do about these pests? | 3.27 | 3.40 | 2.80 | 3.13 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

## Conclusions/Recommendations

The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions in basic to advanced turfgrass instructional modules for the *Turf for Texans* Master Gardener Program. From the findings, it can be concluded that *lawn health, differences between warm and cool season grasses,* and *turfgrass selection factors* were the most important FAQs to include in the basic turfgrass management curricula. According to our experts, *when to fertilize, frequency of irrigation,* and *lawn diseases* were deemed the most important FAQs for inclusion in the advanced turfgrass curricula.

By focusing efforts on developing the key topics identified by a stakeholder group, curriculum developers can appeal to the needs and wants through a targeted curriculum. One of the first steps in designing adult education curricula is to conduct a needs assessment (Sork & Caffarella, 1989). Knowles, Holton, and Swanson (1998) provided two assumptions about adult learning that are critical in the needs assessment phase. These assumptions are the need to know and the learner's self-concept. Essentially, adults need to know why they need to learn something new. Also, adults will resist and resent (learner's self-concept) situations in which they feel others are imposing their will on them (Knowles, Holton, & Swanson). Such assumptions about adult learning provide important reasons for using stakeholder input during curriculum development.

The topics (FAQs) deemed most important, or critical, by stakeholders should become the key points used to develop the turfgrass management curricula. The FAQs deemed less important could be used as complimentary or supplementary information that is included in the instructional modules, but only as time and space allow. A curriculum development plan based on these observations allows stakeholders or prospective students the opportunity for ownership

of the instructional materials. Through participation in the curriculum development phase, learners come to understand why they need to learn new material and should not resist the material being presented because of their ownership in the curricula. Using this information, curriculum developers can design a turfgrass management curriculum that meets the needs of the targeted clientele.

It is important to remember that respondents who worked most closely with the *Turf for Texans* Master Gardener Program identified and ranked the FAQs for these instructional modules. Additional research that includes input from state extension turfgrass specialists from all southeastern states may further refine the subject matter importance for each instructional module. Also, the preferred delivery formats and comprehension rates of such materials should be investigated with adult learner groups in various (reading skill levels, non-English speaking audiences, etc.) settings.

Although the identified and ranked FAQs for the basic to advanced turfgrass management instructional modules proved useful in developing curricula for the *Turf for Texans* Master Gardener Program, the authors believe the most important finding was derived from the methodology used to gather stakeholder input. The findings revealed that the modified Delphi technique through online data collection techniques could be used to effectively determine stakeholders' needs in designing basic to advanced turfgrass management curricula. Participants were able to incorporate their opinions (round one), value judgments (round two), and agreement levels (round three) in a consensus-building process for the FAQs used in the turfgrass management instructional modules.

Additionally, stakeholder input was gathered in an economical, shortened frame (6.5 weeks), confirming the Web-based surveying methods proposed by Ladner, Wingenbach, and

Raven (2002). The modified Delphi technique used in this study provided consistency in the data collection procedures, as proposed by Somers, Baker, and Isbell (1984). By including stakeholders' input to build consensus on relevant topics for extension programs, extension personnel can focus greater attention on developing relevant educational materials for their clientele. We recommend these methodologies (modified Delphi technique and Web-based data collection procedures) be used by agricultural communications professionals and extension personnel when seeking stakeholder input for instructional materials development.

## References


Branson, Jr., F. F., & Davis, S. M. (1985). How closed circuit TV works for Extension. *Journal of Extension, 23*(1). Retrieved July 17, 2003, from http://www.joe.org/joe/1985spring/a6/html

Debecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning*. Glenview, Illinois: Scott, Foresman and Company.

Dooley, K., Van Laanen, P. G., & Fletcher, R. (1999). Food safety instructor training using distance education. *Journal of Extension, 37*(3). Retrieved September 16, 2003, from http://www.joe.org/joe/1999june/a5.html

Kerlinger, F. N. (1986). *Foundations in behavioral research* (3rd ed). Fort Worth, TX: Holt, Rinehart and Winston, Inc.

Knowles, M., Holton, E., & Swanson, R. (1998). *The adult learner: The definitive classic in adult education and human resource development* (5th ed.). Houston, TX: Gulf Publishing Co.

Ladner, D., Wingenbach, G., & Raven, M. (2002). Internet and paper-based data collection methods in agricultural education research. *Journal of Southern Agricultural Education Research, 52*(1), 40-51.

Ludwig, B. (1997). Predicting the future: Have you considered using the Delphi methodology? *Journal of Extension, 35*(5). Retrieved September 17, 2003, from http://www.joe.org/joe/1997october/tt2.html

Ricketts, J., Hoelscher-Day, S., Begeman, G., & Houtkooper, L. (2001). Interactive distance learning effectively provides winning sports nutrition workshops. *Journal of Extension, 39*(5). Retrieved July 16, 2003, from http://www.joe.org/joe/2001october/a1/html

Rost, B., & VanDerZanden, A. M. (2002). A case study of online learners participating in the Oregon State University Extension Service master gardener training program. *Journal of Applied Communications, 86*(2), 7-16.

Somers, K., Baker, G., & Isbell, C. (1984). How to use the Delphi technique to forecast training needs. *Performance and Instruction Journal, 23*(4), 26-28.

Sork, T. J. and Caffarella, R. (1989). Planning programs for adults. In S. Merriam, and P. Cunningham, (Eds.), *Handbook of adult and continuing education* (pp. 233-245). San Francisco: Jossey-Bass Publishers.

Sunnarborg, K., Bradley, L., & Haynes, D. K. (1988). The TV connection. *Journal of Extension 26*(2). Retrieved September 17, 2003, from http://www.joe.org/joe/1988summer/a2.html

Swistock, B. R., Sharpe, W. E., & Dickison, J. (2001). Educating rural private water system owners in Pennsylvania using satellite versus traditional programs. *Journal of Extension 39*(3). Retrieved September 16, 2003, from http://www.joe.org/joe/2001june/a7.html

# METHODS OF INFORMATION DISSEMINATION TO LIMITED-SCALE LANDOWNERS

D. Dwayne Cartmell II, Assistant Professor
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-0461
FAX: (405) 744-5176
E-mail: dcart@okstate.edu

Chandra L. Orr, Graduate Student
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-8135
FAX: (405) 744-5176

Danna B. Kelemen, Graduate Student
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-8135
FAX: (405) 744-5176
E-mail: dannak@okstate.edu

**Abstract**

Information and technology are ever-changing characteristics of the world in which we live. The Cooperative Extension Service strives to meet the needs of their audience by providing relevant information through a variety of informational outlets. Studies indicate that clientele preferences do exist and are dependent upon the audience itself. Therefore, the dissemination of information must be conducive to the needs. As the population moves from city dwelling to rural residency, the methods for information dissemination must be closely examined to determine the role of technology in dissemination and the role of demographics in preferred delivery method. This paper is a study of the informational needs of limited-scale landowners within the urban/rural interface of Lincoln County, Oklahoma, to address the methods of information dissemination by the Cooperative Extension Service and the role that demographic variables play in the preferred delivery method to intended audience members. Findings indicate that the Extension's audience prefers the use of direct mail as the primary method of information dissemination. The majority of the audience members owned a computer and a VCR and less than half used the Cooperative Extension Service. In cross-referencing age and education level with preferred sources of information, the study indicated that audience members, regardless of age and education level preferred direct mail as their source for information dissemination. Therefore the relationship in this study between age and educational level is inconclusive as it relates to preferred methods of information dissemination.

Key Words: Cooperative Extension Service, Extension, Limited-Scale Landowner, Urban/Rural Interface.

## Introduction

Information dissemination is a core principle of the Oklahoma Cooperative Extension Service (Orr, 2003). If information is to be used and empowering, it must be disseminated in a manner that best facilitates its reception. However, information is delivered in a multitude of manners and the challenge is to determine which method is most appropriate to the audience attempting to be reached. Knowing where people look for information is only half the battle for Extension communicators; but knowing where people find information is the other half (Pounds, 1985). Studies clearly show that clientele preferences do exist and may be quite different depending upon the audience being served. Considering the great variability among groups and indicated personal preferences, it is likely that no single delivery method is suitable for everyone (Richardson, 1995). Previous studies have noted that farmers' preferences for informational delivery methods depend on a variety of demographic characteristics such as age, income, formal education, and farm size (Iddings & Apps, 1992). Landowners living in the urban/rural interface have diverse interests and unique concerns (Creighton, Baumgartner, & Gibbs, 2002). The abundance of methods for disseminating information creates a need for Extension to know the types of technology its audience owns and/or regularly uses (Orr, 2003). Knowing the audience will assist the source in disseminating information in a method that is both well received and used.

## Purpose

The purpose of this study was to examine methods of information dissemination to limited-scale landowners in Lincoln County, Oklahoma.

## Research Objectives

(1) To determine the preferred information dissemination method/s of limited-scale landowners in Lincoln County, Oklahoma.

(2) To determine what method/s of information dissemination the Oklahoma Cooperative Extension Service uses to reach limited-scale landowners in Lincoln County, Oklahoma.

(3) To describe the technological capabilities of limited-scale landowners in Lincoln County, Oklahoma.

(4) To describe the preferred information dissemination method/s based on demographic variables of limited-scale landowners in Lincoln County, Oklahoma.

## Review of the Literature

For more than 75 years, Extension's mission has been the dissemination of information and knowledge derived from practical experience to help people lead more productive and satisfying lives (St. Clair, 2001). The Morrill Acts of 1862 and 1890 made possible the establishment of colleges for American citizens (1862, 1890). The Homestead Act of 1862 gave citizens the opportunity to own land of their own and encouraged agricultural practices on the land that helped to settle the United States (1862). The Hatch Act of 1887 provided federal funds for agricultural research at state colleges and universities, thus establishing agricultural experiment stations (1887). The Smith-Lever Act of 1914 set up the Cooperative Extension system of county agents (1914). All five Acts in early American history played a significant role in establishing agriculture as a mainstay of our country.

The Extension Service must be able to provide information that makes a difference (Astroth, 1990). Extension provides an important linkage between farmers and researchers, and

farmers have come to value the services they receive from Extension (Ekanem, Singh, Tegegne, & Akuley-Amenyenu, 2001). In a less-complicated time, the Cooperative Extension Service was simpler. The land-grant university research findings were disseminated directly to rural people by agents in the counties (Buford, 1990). The dawn of the information age has forced Cooperative Extension to radically change its methods of disseminating research-based information to clientele to compete with private enterprise and other educational institutions (Boldt, 1987). Today, as we navigate through the information and technology-laden world in which we now live, the sharing of information becomes easier and yet more complex. New methods for dispersing information have surfaced, yet not all individuals have adapted to this new form of communication via electronic media such as computers, television, VCRs, DVD players, and the Internet.

The challenge arises in how best to disseminate information to target populations. For the Cooperative Extension Service to best serve its intended audience, it needs to determine who its audience is and how to most effectively target and disseminate information to that audience (Orr, 2003). Not only does the Cooperative Extension Service strive to meet the needs of large production farms, but also it seeks to fulfill the needs of small-farm landowners, non-traditional producers, and homeowners (Polson & Gastier, 2001). Subsequently, because of a much broader audience today, Extension must seek the most effective means of reaching individuals based on their preferences for receiving information.

Agriculture remains the most important industry in rural America, but now employs relatively few people (Dillman, 1991). In addition, Dillman (1991) points out that more than 60% of all farm families rely on off-farm income to help support their lifestyles. As these changes occur, so too do the methods landowners use to obtain information. Research indicates

that people use different sources depending on the kind of information they are seeking (Pounds, 1985). One study showed that family, friends, and neighbors, along with newsletters, bulletins and fact sheets, magazine articles, printed dealer/sales materials, and farm organizations/associations were most frequently used as information sources (Phipps, Murphy, Maddox, & Neas, 2001). However, Richardson reported (1995) that an interesting finding showed that even though great diversity existed in the interests of the targeted audiences and the program focus for those audiences, their preferences of delivery methods were remarkably similar. The Cooperative Extension Service uses many methods to disseminate information to select audiences (Orr, 2003). Orr stated that while Extension still uses meetings, on-farm visits, and field days to some extent, much information also can be found in media formats such as the Internet, videos, and computer software packages. Thus, the need to know the audience is imperative to determine the preferred methods of information dissemination.

In urban counties and counties adjacent to urban areas, the farm population is an even smaller proportion of the rural population due to the increased movement of non-farm residents from city to countryside (Sharp, Imerman, & Peters, 2002). In Oklahoma, approximately 36.8% of the state's population (n=1,258,600) lives in the metropolitan areas of Tulsa and Oklahoma City (Population Statistics, 2003). In 2002, 33% of Oklahoma's population was classified as living in rural areas (Development Alliance, 2002). However, in Lincoln County, Oklahoma, the urban/rural interface between Tulsa and Oklahoma City, 82.8% of the population is considered rural (Development Alliance, 2002). As a result, there is a growing concern about the future of farming at the urban/rural interface (Sharp, Imerman & Peters, 2002). This trend in

Oklahoma alone indicates that the rural population is increasing and the need for information dissemination will likely rise accordingly.

## Methods

The research design used for this study was descriptive in nature using a telephone interview. Since the survey used a random sample, the data can only be generalized back to the original population.

The population was landowners who owned 50 acres of land or less (N=808) in Lincoln County. The landowners' information was compiled by the Lincoln County Cooperative Extension Service (Jones, 2001). Lincoln County was chosen in Oklahoma because of the concentration of limited-scale landowners, and it is an ideal representation of the urban/rural interface as it is located between Tulsa and Oklahoma City.

Individuals on the original list who were duplicates or did not have a phone number were removed from the population. The final population used in this study numbered 707. Using the final population number and the Krejcie & Morgan (1970) table, it was determined the study needed approximately 254 responses to reach a 95% confidence level so results could be generalized to the population. A random sample of the population was surveyed by the Oklahoma Agricultural Statistics Service who was hired to conduct the telephone interviews. The OASS generated 300 useable responses.

### *Instrument*

A 42-question telephone survey was developed to address the research questions determined by the researchers. A pilot study was conducted to determine the reliability and validity of the instrument. At the completion of the pilot study, data were analyzed and the instrument was revised to improve its validity and to reduce confusion on the part of the

respondents and those administering the survey. Feedback was encouraged from both the surveyors and respondents to generate a more precise and accurate survey for the main study. The questions contained in the survey consisted of short-answer questions, “yes/no” questions, interval questions, and multiple-choice questions. Those sampled in the pilot study were removed from the population to be used for the main study.

In the pilot study, some confusion arose on behalf of some of the participants to wording issues on the instrument. A committee was formed to review the pilot study, analyze the problem areas, and clarify the instrument. This not only made the survey easier to administer and respond to, but also allowed the results from the instrument to be more valid and reliable.

Reliability was assessed through the pilot study and was determined by the pilot study participants’ ability to consistently answer the questions without confusion. Since there were no scaled items in the instrument, it was unnecessary to run a Chronbach's Alpha.

A panel of experts consisting of faculty members from Oklahoma State University, the Associate Director of the Oklahoma Cooperative Extension Service, the Associate Director of the Oklahoma Agricultural Extension Service, and the State Statistician of the Oklahoma Agricultural Statistics Service were used to establish content validity of the instrument.

*Data Collection and Analysis*

The Oklahoma Agricultural Statistics Service administered the telephone survey between the dates of Nov. 12, 2002, and Nov. 20, 2002. A postcard was sent to potential respondents to notify the individuals several days prior to data collection of the upcoming survey. Both genders were surveyed; however, the gender was determined by the landowner who answered the phone.

Descriptive statistics were used for data analysis because of the nature of the study. Respondents were asked open-ended questions, "yes/no" questions, multiple-choice questions, and interval questions.

The data gathered from the instrument was statistically analyzed using the version 11.0 Window's Statistical Package for Social Sciences (SPSS) and hand analysis. The data was coded into SPSS to analyze non-inferential statistics.

## Findings

### *Findings Related to Information Dissemination Methods and Information Dissemination Methods Used by the Cooperative Extension Service*

The first and second research objectives of this study address the preferred information dissemination methods of limited-scale landowners in Lincoln County, Oklahoma, and the methods used by the Cooperative Extension Service to reach these landowners. To address these questions, it is necessary to know what percentage of respondents use the Cooperative Extension Service and for what purposes.

### *Limited-Scale Landowners in the Rural/Urban Interface of Lincoln County, Oklahoma, Who Use the Cooperative Extension Service*

Of the responses generated in this survey, 32.7% (n=98) answered that they did use the Cooperative Extension Service, 66.7% (n=200) answered that they did not use the Cooperative Extension Service, and 0.7% (n=2) failed to answer.

Of those respondents who did use the Cooperative Extension Service, 85.7% (n=256) also provided a response of how they used the Cooperative Extension Service (Table 1). The primary usage was for information purposes about soil conservation, types of vegetation to plant, water testing, supplies for livestock, and breeds of livestock that are suitable to Oklahoma.

Table 1

*Cooperative Extension Service Uses*

| Use | n | % |
|---|---|---|
| Information | 33 | 39.3 |
| Crop problems /needs | 14 | 16.7 |
| Gardening/Canning | 7 | 8.3 |
| Livestock information | 7 | 8.3 |
| Other | 7 | 8.3 |
| Soil issues | 6 | 7.1 |
| Workshops/Classes | 4 | 4.8 |
| Land Improvement | 3 | 3.6 |
| Water issues | 3 | 3.6 |

*Important Information Sources and Media Formats for Limited-Scale Landowners in the Urban/Rural Interface in Lincoln County, Oklahoma*

*Information Sources.*

For the Cooperative Extension Service to better serve its audience, it needs to know the information sources its audience is already using. Of those respondents who completed the survey, they were asked where they received their agricultural information. They were allowed to respond with more than one source. From this question, the survey generated 437 responses. The primary response was the Cooperative Extension Service with 108 responses, followed by the Internet with 59; other responses were generated such as: magazines (11.5%), other people (11.5%), the local co-op (11.1%), Oklahoma State University (6.1%), agricultural organizations (5.8%), the local agriculture teacher (5.6%), the feed store (4.6%), the coffee shop (4.0%), the library (0.6%), reading (1.5%), the courthouse (0.8%), T.V. (0.6%), trial and error (0.4%), mail (0.2%), the newspaper (0.2%), the radio (0.2%), and fairs (0.2%) (Table 2).

Table 2

*Information Sources*

| Source | n | % |
|---|---|---|
| Extension Service | 108 | 22.5 |
| Internet | 59 | 12.4 |
| Magazines | 55 | 11.5 |
| Person to Person | 55 | 11.5 |
| Local Coop | 53 | 11.1 |
| Oklahoma State University | 29 | 6.1 |
| Agriculture Organizations | 28 | 5.8 |
| Agricultural Teacher | 27 | 5.6 |
| Feed store | 22 | 4.6 |
| Coffee shop | 19 | 4.0 |
| Reading | 7 | 1.5 |
| Courthouse | 4 | 0.8 |
| T.V. | 3 | 0.6 |
| Library | 3 | 0.6 |
| Trial & Error | 2 | 0.4 |
| Direct Mail | 1 | 0.2 |
| Newspaper | 1 | 0.2 |
| Veterinarian | 1 | 0.2 |
| Radio | 1 | 0.2 |
| Fairs | 1 | 0.2 |

*Preferred Media Format.*

The respondents were given the option in the survey to select their preferred method of receiving information from the following: Internet, direct mail, magazines, technical publications, newspaper, television, radio, workshops, and other. The respondents were allowed to select as many methods as they used. A majority of the respondents preferred direct mail (53.0%), and the least preferred methods were workshops and the radio, both with 3.0% (Table 3).

*Findings Related to Technological Capabilities*

The third research question addresses the technological capabilities of limited-scale landowners in Lincoln County, Oklahoma. To answer this question, this paper focused on

Table 3

*Preferred Media Format*

| Format | n | % |
|---|---|---|
| Direct Mail | 159 | 53.0 |
| Magazines | 70 | 23.3 |
| Television | 59 | 19.7 |
| Internet | 53 | 17.7 |
| Other | 28 | 9.3 |
| Newspaper | 27 | 9.0 |
| Technical Publications | 17 | 5.7 |
| Radio | 9 | 3.0 |
| Workshops | 9 | 3.0 |

identifying the best methods of sharing information with a targeted audience. To accomplish this, the type of technological advances present in the population's home is needed.

*Owning a computer.*

In this survey, respondents were asked if they owned a computer. In this study, 71.0 % answered that they owned a computer and 29.0% answered that they did not own a computer. Of those who answered positively to owning a computer, 57.4% reported the computer was more than two years old (Table 4). This study also found that out of those respondents who owned computers, 82.6% had Internet access, and 17.4% did not have Internet access.

Table 4

*Computer Age*

| Age in Years | n | % |
|---|---|---|
| <1 | 20 | 9.3 |
| 1 | 20 | 9.3 |
| 1 - 2 | 50 | 23.5 |
| 2 - 3 | 44 | 20.7 |
| > 3 | 78 | 36.7 |
| Did not respond | 1 | 0.5 |

*Hours spent on the computer.*

Of the 300 respondents surveyed, 197 reported the amount of time they spent on the

computer each day. The responses ranged from zero time spent on the computer each day to 16 hours spent on the computer each day. Of those who spent time on the computer, a majority (76.1%) used the computer three hours or less each day (Table 5).

Table 5

*Time on computer*

| Hours | n | % |
|---|---|---|
| 0 | 3 | 1.5 |
| <1 | 18 | 9.1 |
| 1 | 62 | 31.5 |
| 2 | 42 | 21.3 |
| 3 | 28 | 14.2 |
| 4 | 18 | 9.1 |
| 5 | 10 | 5.1 |
| 6 | 8 | 4.1 |
| 7 | 2 | 3.5 |
| 8 | 4 | 2.0 |
| 10 | 1 | 0.5 |
| 16 | 1 | 0.5 |

*Owning a VCR or DVD player.*

When the respondents were asked if they owned a VCR, 284 (94.7%) answered yes and 16 (5.3%) answered no. When respondents were asked about owning a DVD player, 95 (31.7%) respondents answered "yes," 204 (68.0%) answered "no," and one (0.3%) failed to respond.

*Findings Related to Demographic Variables*

The final research objective of this study addresses the demographic variables with regard to preferred information dissemination methods of limited-scale landowners in Lincoln County, Oklahoma. To answer this question, a cross-tabulation was conducted between the age of the respondents and their education level in comparison to their preferred method for information dissemination.

*Age.*

The respondents' ages were grouped into four categories; 30 years old or younger, between the ages of 31 and 50, between the ages of 51-70, and over the age of 70. These age groups were then cross-referenced with the different information sources. Those respondents 30 years old or younger preferred direct mail, as did respondents aged 31-50 and 51-70, where respondents over the age of 70 equally preferred direct mail and television (Table 6). The second preferred media format for all respondents under the age of 70 was magazines. Respondents over 70 preferred television.

Table 6

*Preferred Media Format Based on Age*

| Age | 30 or less(n) | 31-50(n) | 51-70(n) | Over 70(n) |
|---|---|---|---|---|
| Direct Mail | 7 | 61 | 79 | 12 |
| Television | 2 | 13 | 32 | 12 |
| Magazines | 3 | 25 | 36 | 6 |
| Internet | 3 | 21 | 23 | 6 |
| Newspaper | 1 | 7 | 16 | 3 |
| Technical Publications | 1 | 8 | 7 | 1 |
| Radio | 0 | 1 | 7 | 1 |
| Workshops | 0 | 3 | 5 | 1 |
| Other | 0 | 7 | 17 | 4 |

*Education Level.*

The respondents' educational level was grouped into four categories; did not graduate, high school diploma, technical school or some college, and degreed. These education levels were then cross-referenced with the different information sources. All respondents in all four education level categories preferred direct mail (Table 7). The second preferred media format by education level varied among television, magazines, and the Internet.

## Conclusions

The findings of this study indicate that the audience prefers the use of direct mail as the

Table 7

*Preferred Media Format Based on Education Level*

| Ed. Level | No Diploma(n) | Diploma(n) | Tech/College(n) | Degree(n) |
|---|---|---|---|---|
| Direct Mail | 16 | 65 | 58 | 20 |
| Television | 11 | 22 | 21 | 5 |
| Magazines | 6 | 22 | 27 | 15 |
| Internet | 3 | 11 | 26 | 13 |
| Newspaper | 3 | 9 | 10 | 5 |
| Technical Pub. | 0 | 3 | 9 | 5 |
| Radio | 0 | 3 | 4 | 2 |
| Workshops | 0 | 3 | 4 | 2 |
| Other | 2 | 8 | 11 | 7 |

primary method of information dissemination. In addition, audience members also indicated that television, magazines, videos that can be seen on a VCR, and the use of the Internet are the secondary preferred media formats for information dissemination. The study showed a majority of the audience owned a computer and did have access to the Internet. Of those who did own a computer, the majority indicated that their computer was more than two years old. While almost all audience members owned a VCR, very few owned a DVD player; thus limiting their technological capabilities further.

The findings also showed that more than half of the audience did not use the Cooperative Extension Service. However, the findings did indicate that the audience most often sought agricultural information from the Extension or the Internet. The audience members indicated that even with technological advancements in place, like computers and VCRs, the preferred method of information dissemination remained direct mail.

In cross-tabulation, the study further indicated that the majority of respondents aged 30 years or less, aged 31-50, and aged 51-70 preferred direct mail, while those over the age of 70 equally preferred direct mail and television as their preferred method of information dissemination. This finding is in agreement with the general findings of the study. The general

findings of the study are further reaffirmed with respondents having all levels of education choosing direct mail as well. The cross-tabulation of age and education level indicates no differences than those found in the findings of the general study. Therefore, while age and educational levels of respondents may differ, their preferred method of information dissemination remains the same.

## Recommendations

With technological advances in the 21st century changing on a daily basis, it is crucial for the dissemination of information to be purposeful and targeted. The Cooperative Extension Service strives to meet this need for relaying information to their intended audience by determining their audiences' preferred method of informational delivery. The challenge lies in not necessarily using the latest or trendiest of technological advancements to deliver the message, but rather in determining the most effective method of reaching a particular audience.

Demographic factors may or may not play a role in informational delivery and should be examined further to determine how they relate to a particular audience with specific demographics as well as specific technological capabilities. In addition, a separate study should be conducted to determine why specific technological capabilities are used while others are not. Findings from such a study may indicate if Extension should be providing training to its audience with regard to technological capabilities.

This study used the urban/rural interface population of Lincoln County, Oklahoma, as a basis for study because of the trend of migration toward rural areas by city dwellers. A study should be conducted on a larger scale to determine if the results are similar and to generalize the findings beyond the scope of this sample population so that Extension can better meet its audiences' needs nationwide.

References

Astroth, K. A. (1990). Information Technology: Extension's Future. *Journal of Extension.* [Online]. 28(1). Available at: http://www.joe.org/joe/1990spring/f1.html.

Boldt, W. G. (1987). Targeting Audiences and Using Creative Media Approaches. *Journal of Extension.* [On-line]. 25(1). Available at: http://www.joe.org/joe/1987spring/rb2.html.

Buford, J.A. (1990). Extension Management in the Information Age. *Journal of Extension* [Online]. 28(1). Available at : http://www.joe.org/joe/1990spring/fut2.html.

Creighton, J.H., Baumgartner, D. M., & Gribbs, S. D. (2002). Fire Prevention in the Urban/Rural Interface: Washington's Backyard Forest Stewardship/Wildlife Safety Program. *Journal of Extension.* [On-line]. 40(2). Available at: http://www.joe.org/joe/2002april/entiw. html.

Development Alliance. (2002). *Development Alliance Community Demographics – State Data of Oklahoma.* Retrieved July 11, 2003 from: http://www.developmentalliance.com/demog/GetDAstate1.cfm?=OK.

Dillman, D. A. (1991). Agricultural Gatekeepers – Real Barrier to Rural Development. *Journal of Extension.* Vol. 29 No. 1.

Ekanem, E., Singh, S. P., Tegegne, F., & Akuley-Amenyenu, A. (2001). Differences in District Extension Leaders' Perceptions of the Problems and Needs of Tennessee Small Farmers. *Journal of Extension.* [On-line]. 39(4). Available at: http://www.joe.org/joe/2001august/rb4.html.

Hatch Act. (1887). *Hatch Act of 1887.* Retrieved April 9, 2003 from: http://www.reeusda.gov/1700/legis/hatch.htm.

Homestead Act (1862). Retrieved April 1, 2003 from: http://www.geocities.com/Heartland/Bluffs/3010/homestd.htm.

Homestead National Monument of America. (n.d.) *The Homestead Act.* Retrieved May 1, 2003 from: http://www.nps.gov/home/homestead_act.html.

Iddings, R. K., & Apps, J. W. (1992). Learning Preferences and Farm Computer Use. *Journal of Extension.* [On-line]. 30(3). Available at: http://www.joe.org/joe/1992fall/a4.html.

Krejcie, R. V., & Morgan, D. E. (1970). Determining Sample Size for Research Activities. *Educational And Psychological Measurement. 30.* 607-610.

Morrill Act. (1862). Retrieved March 31, 2003 from: http://www.ans.iastate.edu/archives/morrill1862.html.

Morrill Act. (1890). Retrieved April 1, 2003 from: http://www.ifas.ufl.edu/ls_grant/morrill2.htm.

Orr, C.L. (2003). Informational Needs of Limited-Scale Landowners within the Urban/Rural Interface of Lincoln County, Oklahoma (Master's thesis, Oklahoma State University, 2003).

Phipps, M. S., Murphy, B., Maddox, S., & Neas, K. (2001). Agriculture Information Preference Study. Available at: http://www.ncagr.com/research.

Polson, J., & Gastier, T. (2001). Small Farm/New Farm: One Agent Meeting Other Agents' Needs for Research-Based Information Through the WWW. *Journal of Extension.* [Online]. 39(4). Available at: http://www.joe.org/joe/2001august/tt1.html.

Populations Statistics. (2003). *United States of America – Oklahoma :urban population.* Retrieved July 11, 2003 from: http://www.library.uu.nl.wesp/populstat/Americas/usas oky.htm.

Pounds, D. (1985). Putting Extension Information Where People Will Find It. *Journal of Extension.* [On-line]. 23(4). Available at: http://www.joe.org/joe/1985winter/a6.html.

Richardson, J. G. (1995). *An Assessment of Clientele Preferences for Receiving Extension Information.* Raleigh, N.C.: North Carolina State University. (ERIC Document Reproduction Service No. ED356358)

Sharp, J., Imerman, E., & Peters, G. (2002). Community Supported Agriculture (CSA): Building Community Among Farmers and Non-Farmers. *Journal of Extension.* [On-line]. 40(3). Available at: http://www.joe.org/joe/2002june/a3.html.

Smith-Lever Act. (1914). Retrieved April 1, 2003 from: http://www.highered. org/resources/smith.htm.

St. Clair, C. (2001). *The History and Philosophy of Extension.* University of Missouri Outreach & Extension. IMPACT: A Council Development Project, Leaflet No. 9. Retrieved April 10, 2003 from: http://www.outreach.missouri.edu/extcouncil/Impacts/9.htm.

**Texas Clipping Effort Doesn't Leave Placement Tracking to Shear Luck**

**Kathleen Phillips**
**Agricultural Communications**
**Texas A&M University**
**TAMU 2112**
**College Station, Texas 77843-2112**
**979-845-2872**
**979-845-2414**
**ka-phillips@tamu.edu**

**ABSTRACT**

Texas has about 90 daily newspapers throughout the geographically diverse state. For decades, a goal of Texas A&M's Agricultural Communications has been to regularly place its news stories in these papers. Publishing news and features in the dailies helps the general public be aware of the work of The Texas A&M Agriculture Program, which includes primarily Texas Cooperative Extension and the Texas Agricultural Experiment Station.

By the 1990s, a professional clipping service used for perhaps decades seemed to be less effective that what was needed. The team noticed that many of the news articles seen while casually reading various Texas dailies were not received in the monthly clipping service packet. Also, many of the articles received in the packet pertained to items not requested in the keyword list (wedding announcements of Extension personnel, for example).

Handling appropriate clips received from the service was a problem. The packet was routed amongst the on-campus news writers who extracted clips pertaining to their work. The remaining clips were either placed in a drawer in no particular order or simply thrown away. The field writers did not have the opportunity to examine the contents and no record was kept of any of the clips,.

The system, while relatively low cost, did not effectively and accurately track news results.

In July 2002, an in-house clipping service was designed to be a baseline of all agricultural coverage in Texas daily newspapers, including The Texas A&M System Agriculture Program coverage. All clips would be arranged in an Internet accessible database from which various statistics could be determined.

**Texas Clipping Effort Doesn't Leave Placement Tracking to Shear Luck**

## Introduction

Texas has about 90 daily newspapers scattered throughout the geographically diverse state. For decades, it has been a goal of Agricultural Communications at Texas A&M to place its news stories in these 90 dailies on a regular basis. Publishing news and features in the dailies helps the general public be aware of the programs of The Texas A&M Agriculture Program, which includes primarily Texas Cooperative Extension and the Texas Agricultural Experiment Station.

News has been distributed to these 90 papers in various ways. Decades ago, most of the newspapers were mailed printed copies of the news releases on a weekly basis. More recently, stories were mailed individually to these papers - and other outlets - based on the categories for which these newspapers expressed an interest.

Due to cost, printed copies of news releases were gradually eliminated so that by 2001, no printed copies of news releases were being mailed. All news is disseminated electronically, but not all of the Texas daily newspapers, or key people on their staffs, had been encouraged to subscribed to the free electronic distribution system.

At some point prior to 1990, Agricultural Communications began subscribing to the Texas Press Association's Clipping Service. A series of keywords were given to the service along with a list of desired newspapers from which to clip articles. The service, which sent clips of articles from those papers on a monthly basis, was paid about $2,000 a year.

By the late 1990s, Agricultural Communication's news team was increasingly concerned that many of the news articles seen while casually reading various Texas dailies were not

received in the monthly clipping service packet, though they contained the keywords we specified. Additionally, many of the articles received in the packet pertained to items *not* requested in the keyword list (wedding announcement of Extension personnel or former 4-H members, for example). The clipping service allowed returns and monetary credit for the wrong clips, but because of the time involved in sorting out and return mailing the clips (which had to be done within 30 days of receipt), this was rarely done.

Even appropriate clips received from the service were a problem. The packet was routed amongst the on-campus news writers who extracted clips pertaining to their work. The remaining clips remained in the routing envelope that was either placed in a drawer in no particular order or simply thrown away. The field writers did not have the opportunity to examine the contents and there was no record of any of the clips, including those found by individual writers in various daily newspapers.

The system, while not terribly expensive, did not provide for a way to track news results.

In a survey of university, department and agency communicators at Texas A&M University, 85 percent of the respondents said they consider clipping important because it "keeps me informed, keeps bosses/administrators informed, gauges effectiveness, attracts potential donors/supporters, makes a historical record, is an indicator of audience awareness/interested publics, helps track issues being reported on, justifies our positions, and provides background for speeches, presentations or other writing in the office." (Phillips, 2000)

Clipping is a way of documenting results – the placement of the stories that are disseminated to the media. Thorough beat coverage and pitching of stories should be coupled with a refined clipping effort.

On July 29, 2002, an in-house clipping service was devised. This clipping effort -- from Sept. 1, 2002-Aug. 31, 2003 – was designed to be a baseline of all agricultural coverage in Texas daily newspapers. Stories generated by the Texas A&M System Agriculture Program (Extension, Experiment Station and College of Agriculture and Life Sciences) would be a subset of the clips, and all clips would be arranged in an Internet accessible database for the benefit of both on-campus and field communicators.

Because the Texas A&M Agriculture Program includes family and consumer sciences and 4-H, we included those type articles in our clipping effort, if the subject matter pertained to an issue about which one of our specialists *could have been contacted.*

**Methods/Process**

Various scenarios were considered when designing the in-house clipping service:

- Have each news communicator read a particular set of newspapers daily
- Have the four-person, on-campus team each read a particular set of newspapers daily, perhaps with reading sessions each morning at the campus coffee shop to create a "fun" atmosphere and generate news discussions
- Establish a joint project among agricultural education majors to generate clips which, in turn, would benefit the student's understanding of current events
- Establish a joint project with Newspapers in Education coordinators at each of the newspapers to link with elementary or secondary education classes in clipping the articles
- Hire a student to clip the newspapers

Each of the first four options had obstacles that would limit the effectiveness of moving from an out-sourced to an in-house clipping effort. Having staff read a large number of

newspapers daily, while increasing their knowledge of trends and events in the news, would limit their time for news generation and media contacts. Establishing joint projects with either higher or lower education classes would be a positive step toward building links with these groups but would be harder to manage and decrease Agricultural Communication's control over the effort.

The unit head agreed that hiring a student to clip the newspapers would be the most manageable method.

Which papers to clip

Subscribing to all 90 of the Texas dailies would not only be cost-prohibitive but would be difficult to clip on a daily bases with one part-time student. The project needed enough daily papers to give a good indication of agriculture placements, coverage and geographically balanced representation.

A review of the circulation for each of the 90 papers revealed a range from the Pecos Enterprise's 2,064 daily to the Dallas Morning New's 579,931 daily (Texas Press Association, 2003). Approximately one-third of the papers claim a circulation of more than 17,000 a day. Those 30 are spread geographically across the state.

Because of this, it was decided to subscribe to the 31 top dailies in Texas. The number actually subscribed to was 30, because one paper would not allow a subscription to begin prior to receiving payment. The total circulation for these 30 papers is about 3.6 million.

Budget

To fund this project, the news team and the unit head each redirected a portion of their annual budgets. The main cost was to subscribe to 30 newspapers for a year. We bought a

scanner with OCR software and the binders, glue sticks, hand wipes, all for less than $500. We diverted one of our student positions to handle the daily task of reading and clipping the papers.

The computer, desk, chair, individual newspaper note tags, pens, date stamp and ink pad were all items that we already had on hand. We got two large shelves from the campus surplus.

Clipper – job description

Because the skills required for this position are fairly universal in college students, a large pool of potential employees was available locally from Texas A&M University and Blinn College. The job description posted the following duties:

• Search through daily newspapers to find stories referring to agriculture, especially to the Texas A&M University System Agriculture Program and its personnel.

• Cut news articles from the paper, scan them, organize hard copy using specified system and enter data about articles via online database.

• May do computer searches to find placement of Agriculture Program news articles.

• Generate reports from the database as requested.

•Must be able to work 20 hours a week in at least 4-hour blocks.

Qualifications:

• Must have a good command of English language (both spoken and written),

• Must be able to recognize targeted articles,

• Must use computer for data entry. Knowledge of scanning preferred.

• Interest in journalism and the news business is a plus.

Clipping directions

The following directions were provided to the student worker but also throughout the unit because anyone who had free time was encouraged to clip newspapers:

* Remove the ad inserts, classified section and other non-news items and place in the recycle bin or trash.

* Read the paper for any reference to agriculture (local, state, national, international), the Texas A&M Agriculture Program, stories released by Texas A&M's Ag Comm-News, and articles mentioning or quoting Agriculture Program researchers/Extension personnel. Be sure to include articles pertaining to the Agriculture Program's Family and Consumer Sciences.

* Cut out any article found to contain any of the above (making sure that no pertinent story is on the back of it)

* Attach a note to the paper to include the information needed for the database: name of the newspaper, the date, the page on which the article appeared, the agency, the researcher/Extension person named or quoted; whether the writer is a county agent; the academic department to which that person is assigned. (Circulation of the paper is automated in the database) These notes are in a word processing file which can be copied as needed. Attachment is simplest with a glue stick.

* Scan articles into a searchable text file using OCR software. Store these articles in computer file folders by expert name, date and a file extension for the newspaper code (Ex: w:\news\clips\Pike0702.dmn for a story about Pike on July 2 in the Dallas Morning News). This enables us to get lists of stories by expert, by date or by newspaper.

* Make a copy of each article. File this copy in the binder for the designated newspaper, behind the tab for that month.

* The clipped articles go weekly to the Main Office bulletin board for display and, upon removal at the end of a week, are routed to the writers who may keep them for their files and report to sources.

* Clipped/used newspapers are put into the newspaper recycle bin and regular dumps are arranged through custodians.

* Enter clip information into online database

As part of the protocol for the clipper, there is a list of Texas A&M Agriculture Program references for each paper to indicate counties/facilities to watch for in that paper. These are kept in a notebook with a plastic sleeve for each newspaper, alphabetized by city. Inserted into the sleeve is the list of Ag Program entities that are located in the newspaper's coverage area.

Office Space

Creating space to house the clipping effort took some creativity. We needed an area that had shelves for 30 binds and the newspapers to be stacked, as they arrived, in alphabetical order by city, a computer suitable for data entry, supplies such as scissors, glue sticks and labels, a recycle bin and reading space. The space needed to be fairly secluded to allow for an uninterrupted work atmosphere.

We determined that part of an open reception area could be reconfigured to accommodate the effort. To separate it from traffic flow, we aligned bookcases with their backs to the doorway, forming a cubbyhole on one end of the reception area. A workspace and a computer desk were positioned in an L-shape across from the shelves and a large, rolling recycle bin was situated close to the opening for easy removal. The work area was about 7x12 feet.

Database design

An online form was devised to allow for easy input and report generation. The form allows for quick, radio-button or drop-down selection of the newspaper (linked to its circulation), date, section, page number, agency, whether the article is Agriculture Program related, academic department, center/station and whether the article was a county Extension agent column. The information that is manually input includes the headline, the researcher/Extension person(s) quoted, and the article's writer.

Because this information is entered into a database, it can be downloaded at any time to do reports. The information that could be compiled from this database would include:

* total number of articles placed
* total number of newspapers in which an article placed
* total number of newspapers in which at least one article placed
* time line of when most articles appear (more in summer? More in December?)
* category of articles most likely to run (by academic department, topics)
* Number of page one articles (or other section of placement)
* Articles by/about individual employees (ex: number of articles on Pike)
* Number of articles generated from each center/station
* Total circulation of readers for each story
* Total circulation of readers for all news stories that have been placed in a given time
* Total circulation for readers for all stories in a given category
* Information about stories/readership by agency
* Number of county agent articles

* Articles by newspaper (ex: all Dallas Morning News clips)

Because so many different parameters were included in the input, our computer specialist has indicated that a wide variety of additional reports may be possible to generate beyond what was set up on the online report statistics mechanism.

**Results/Outcomes**

This experiment was twofold in that it gave us the opportunity to design a clipping effort that best fits a state agency news bureau, and it provided us with data on which to judge the value of our news effort against the larger picture at Texas dailies.

The clipping method worked well. In the year-long effort, we amassed a database with some 3,000 clips, categorized by keywords that parallel Texas A&M Agriculture Program efforts. About one-third of the articles had a Texas A&M Agriculture Program connection.

This database is a baseline from which future studies could be judged. It was flexible enough to change and improve upon throughout the year. With some minor changes, which will be mentioned in the discussion section, we decided to continue the clipping effort for the coming year.

The data derived from the clips yielded results that likely will be looked at and rehashed for months if not years. The information one can pull from the massive amount of data will depend on one's interest. For our objectives, we wanted to know how much coverage agriculture was getting in the state's largest dailies and how much of that coverage included the Agricultural Program.

First, not surprisingly, each of the 30 papers ran at least some agriculture news.

The fewest number of agriculture-related articles was in the Port Arthur News with 10 articles between Sept. 1, 2002 and Aug. 31, 2003. This 18,792-circulation daily is in the far southeastern part of Texas near the Louisiana border. Its industries pertain more to shipping and petrochemical production than to agriculture, but there is rice milling and food processing nearby. There also are wildlife and fisheries concerns that would fall under the Texas A&M Agriculture Program umbrella. Examination of the 10 articles during the year included three by the county Extension agent, two about crops or livestock, three about wildlife and fisheries, and one about food.

The largest number of agriculture-related articles in the same time frame was the San Angelo Standard-Times, circulation 30,117. This newspaper, which has a reporter designated to cover agriculture, ran 257 agriculture-related articles from Sept. 1, 2002-Aug. 31, 2003. On average, the San Angelo paper had an agriculture-related story in about 70 percent of its issues.

The San Angelo Standard-Times had far and away more agriculture coverage than any other daily in the study, but about one-third of the newspapers examined had agriculture-related stories about one-third of the time, or at least 120 articles in the year-long study. Six of those 10 newspapers have a reporter designated for agriculture coverage and at least two of them have special agriculture sections.

In addition to finding out where most of the news stories ran, tracking the types of articles also provides information on pursuing news angles with these papers.

The most popular agriculture-related issue covered was gardening with 534 articles, 18 percent of all the articles clipped. But production agriculture articles were a close second with 478 articles, or 16 percent. Other topics garnering more than 100 articles in the year included

health with 339, families and youth with 256, wildlife with 230, business with 214, environment with 125 and policy with 110.

**Discussion/Conclusion**

Setting up the clipping service initially required much attention to detail and then some tweaking as the envisioned project unfolded into reality.

One of the most difficult hurdles to jump was subscribing to the papers. State rules prohibit us from paying for items or services before they are received. Likewise, most of the newspapers have rules that prevent them from allowing a year-long, mailed subscription to begin prior to payment. In most cases, the newspapers have individualized computer software that prevents a circulation clerk from processing a subscription without prior payment. This required us to individually call the circulation manager at each of the 30 papers to request permission for the subscription to begin.

When 30 dailies began showing up at the office, many personnel began showing up to find their hometown newspaper or to seek out ads, coupons, sports stories and other features of the papers. We had to initiate a rule that prevented anyone other than a designated clipper from taking a newspaper to prevent the loss of articles.

Clipping 30 dailies every day – 210 newspapers a week – and searching for every article that referenced any of the agricultural and family/consumer science topics that could pertain to the Agriculture Program was cumbersome. When the student clipper went home at Christmas and spring break, the newspapers would continue to stack up. Secretarial help and assistance from other unit student workers was sought when those people had time. Inevitably, the clippers would get caught up. The most serious backlog occurred when the original clipper graduated in

the spring, so quit working at the end of April. The summer replacement student was not able to start working until June 1 and had to return to her graduate student position on Aug. 31. Therefore, an entire month of papers was backlogged. This happened at a time when state budget cuts caused some reduction in staff who had been helping to clip (a secretary retired and one student position was not staffed in the summer). The August papers, marking the end of the year-long study, were not completed until Sept. 24, 2003.

Despite the buildup, it was decided that all 30 papers should be clipped for at least another year. In hopes of eliminating the buildup of papers that results from student schedules, however, two students were hired to handle clipping for the 2003-04 project.

Another change for 2003-04 is that only articles that refer to the Texas A&M Agriculture Program (its agencies and college) will be clipped. Though all of papers will have to be read as painstakingly as in the first year, we will examine whether the reduction in the number of clipped and database-entered articles will make a difference in the time required by the clipping service. This does result in an additional cost which, we were able to bear with the help of some grant funds. We do not need additional equipment, except for occasional supplies (hand wipes and glue sticks). The cost of the subscriptions for the coming year are roughly the same.

When we got behind in the clipping due to student and staff changes, we discontinued the scanning of articles. With one clipper and hundreds of articles being found during the summer months, scanning became a low priority. With the beginning of the 2003-04 project, we plan to restart the scanning of our articles for archival purposes since this year's project will include only Agriculture Program articles.

A change in the work space area was required due to a total revamp of the Agricultural Communications unit. An area formerly occupied with various storage items and a printer was

cleared toward the back of our office suite. The bookshelves were used there, but the desk and computer table were replaced with a more narrow table along the wall in a 7x9-foot area.

Acting on advice to include as many parameters as one can think of for the database was a good decision. The database is proving useful for items not originally considered, such as the number of agriculture-related stories that appeared on Page One. The recommendation is to always include data in as automated way as possible as it may be used later.

After a year of collecting data, however, we are examining the database structure to see if it mirrors the reality of newspaper publishing. For example, we started the database with 16 categories that roughly align with the Agriculture Program's academic departments. Early in the project, we determined that some articles did not fit within those categories, so we added an "other" line and the option for the clipper to fill in a word to describe those articles.

Information gleaned from the other category indicates that some of the categories need to be better explained to the data entry person and some additional categories need to be added for the second year of this project.

One of the uses that we didn't foresee was for visits with newspaper staffers that we previously had not met with. Most of the planning had agriculture/business writers and lifestyles editors in mind. Our news team now has plans to visit the managing editors and web editors, in addition to agriculture writers and lifestyles editors, at each of the 30 papers by the end of the calendar year. Meeting with the managing editor, for example, and showing the list of all agriculture stories printing in his/her paper for the past year has proven useful in opening discussions about the need and plans for coverage of this massive industry in Texas.

Without a doubt, this method of clipping is more expensive than perhaps any other commercial service offered. However, there is no other service we have found that meets our

precise needs. We have chosen to put budget for this effort in order to track our results and, thus be better equipped to communicate with the pubic through the news media.

The data shows us which papers are more likely to cover agriculture at this point and how much of the data pertained to the Texas A&M Agriculture Program. That information also gives us a clear picture of where we can continue to build on existing relationships and where we need to followup to increase coverage of agriculture and of our agencies. The data also will be used to examine identity issues for the Agriculture Program agencies and a variety of other issues.

At some point in the future, we believe it would be good to again clip for all references to agriculture. That data could give us a measure to compare with the baseline we generated in 2002-03.

**References**

Phillips, K., G. Farrell, T. Inbody, M. Downey, 2000. Texas A&M Communicators Clipping Service Survey Results. Aug. 22, 2000. Paper presented to TAMCOM members.

Texas Press Association. Viewed online 09/23/03. **Http://www.texaspress.com**

**Texas Clipping Effort Doesn't Leave Placement Tracking to Sheer Luck**

**Kathleen Phillips**
**Agricultural Communications**
**Texas A&M University**
**TAMU 2112**
**College Station, Texas 77843-2112**
**979-845-2872**
**979-845-2414**
**ka-phillips@tamu.edu**

**ABSTRACT**

Texas has about 90 daily newspapers throughout the geographically diverse state. For decades, a goal of Texas A&M's Agricultural Communications has been to regularly place its news stories in these papers. Publishing news and features in the dailies helps the general public be aware of the work of The Texas A&M Agriculture Program, which includes primarily Texas Cooperative Extension and the Texas Agricultural Experiment Station.

By the 1990s, a professional clipping service used for perhaps decades seemed to be less effective that what was needed. The team noticed that many of the news articles seen while casually reading various Texas dailies were not received in the monthly clipping service packet. Also, many of the articles received in the packet pertained to items not requested in the keyword list (wedding announcements of Extension personnel, for example).

Handling appropriate clips received from the service was a problem. The packet was routed amongst the on-campus news writers who extracted clips pertaining to their work. The remaining clips were either placed in a drawer in no particular order or simply thrown away. The field writers did not have the opportunity to examine the contents and no record was kept of any of the clips,.

The system, while relatively low cost, did not effectively and accurately track news results.

In July 2002, an in-house clipping service was designed to be a baseline of all agricultural coverage in Texas daily newspapers, including The Texas A&M System Agriculture Program coverage. All clips would be arranged in an Internet accessible database from which various statistics could be determined.

**Texas Clipping Effort Doesn't Leave Placement Tracking to Sheer Luck**

## Introduction

Texas has about 90 daily newspapers scattered throughout the geographically diverse state. For decades, it has been a goal of Agricultural Communications at Texas A&M to place its news stories in these 90 dailies on a regular basis. Publishing news and features in the dailies helps the general public be aware of the programs of The Texas A&M Agriculture Program, which includes primarily Texas Cooperative Extension and the Texas Agricultural Experiment Station.

News has been distributed to these 90 papers in various ways. Decades ago, most of the newspapers were mailed printed copies of the news releases on a weekly basis. More recently, stories were mailed individually to these papers - and other outlets - based on the categories for which these newspapers expressed an interest.

Due to cost, printed copies of news releases were gradually eliminated so that by 2001, no printed copies of news releases were being mailed. All news is disseminated electronically, but not all of the Texas daily newspapers, or key people on their staffs, had been encouraged to subscribed to the free electronic distribution system.

At some point prior to 1990, Agricultural Communications began subscribing to the Texas Press Association's Clipping Service. A series of keywords were given to the service along with a list of desired newspapers from which to clip articles. The service, which sent clips of articles from those papers on a monthly basis, was paid about $2,000 a year.

By the late 1990s, Agricultural Communication's news team was increasingly concerned that many of the news articles seen while casually reading various Texas dailies were not

received in the monthly clipping service packet, though they contained the keywords we specified. Additionally, many of the articles received in the packet pertained to items *not* requested in the keyword list (wedding announcement of Extension personnel or former 4-H members, for example). The clipping service allowed returns and monetary credit for the wrong clips, but because of the time involved in sorting out and return mailing the clips (which had to be done within 30 days of receipt), this was rarely done.

Even appropriate clips received from the service were a problem. The packet was routed amongst the on-campus news writers who extracted clips pertaining to their work. The remaining clips remained in the routing envelope that was either placed in a drawer in no particular order or simply thrown away. The field writers did not have the opportunity to examine the contents and there was no record of any of the clips, including those found by individual writers in various daily newspapers.

The system, while not terribly expensive, did not provide for a way to track news results.

In a survey of university, department and agency communicators at Texas A&M University, 85 percent of the respondents said they consider clipping important because it "keeps me informed, keeps bosses/administrators informed, gauges effectiveness, attracts potential donors/supporters, makes a historical record, is an indicator of audience awareness/interested publics, helps track issues being reported on, justifies our positions, and provides background for speeches, presentations or other writing in the office." (Phillips, 2000)

Clipping is a way of documenting results – the placement of the stories that are disseminated to the media. Thorough beat coverage and pitching of stories should be coupled with a refined clipping effort.

On July 29, 2002, an in-house clipping service was devised. This clipping effort -- from Sept. 1, 2002-Aug. 31, 2003 – was designed to be a baseline of all agricultural coverage in Texas daily newspapers. Stories generated by the Texas A&M System Agriculture Program (Extension, Experiment Station and College of Agriculture and Life Sciences) would be a subset of the clips, and all clips would be arranged in an Internet accessible database for the benefit of both on-campus and field communicators.

Because the Texas A&M Agriculture Program includes family and consumer sciences and 4-H, we included those type articles in our clipping effort, if the subject matter pertained to an issue about which one of our specialists *could have been contacted.*

**Methods/Process**

Various scenarios were considered when designing the in-house clipping service:

- Have each news communicator read a particular set of newspapers daily
- Have the four-person, on-campus team each read a particular set of newspapers daily, perhaps with reading sessions each morning at the campus coffee shop to create a "fun" atmosphere and generate news discussions
- Establish a joint project among agricultural education majors to generate clips which, in turn, would benefit the student's understanding of current events
- Establish a joint project with Newspapers in Education coordinators at each of the newspapers to link with elementary or secondary education classes in clipping the articles
- Hire a student to clip the newspapers

Each of the first four options had obstacles that would limit the effectiveness of moving from an out-sourced to an in-house clipping effort. Having staff read a large number of

newspapers daily, while increasing their knowledge of trends and events in the news, would limit their time for news generation and media contacts. Establishing joint projects with either higher or lower education classes would be a positive step toward building links with these groups but would be harder to manage and decrease Agricultural Communication's control over the effort.

The unit head agreed that hiring a student to clip the newspapers would be the most manageable method.

Which papers to clip

Subscribing to all 90 of the Texas dailies would not only be cost-prohibitive but would be difficult to clip on a daily bases with one part-time student. The project needed enough daily papers to give a good indication of agriculture placements, coverage and geographically balanced representation.

A review of the circulation for each of the 90 papers revealed a range from the Pecos Enterprise's 2,064 daily to the Dallas Morning New's 579,931 daily (Texas Press Association, 2003). Approximately one-third of the papers claim a circulation of more than 17,000 a day. Those 30 are spread geographically across the state.

Because of this, it was decided to subscribe to the 31 top dailies in Texas. The number actually subscribed to was 30, because one paper would not allow a subscription to begin prior to receiving payment. The total circulation for these 30 papers is about 3.6 million.

Budget

To fund this project, the news team and the unit head each redirected a portion of their annual budgets. The main cost was to subscribe to 30 newspapers for a year. We bought a

scanner with OCR software and the binders, glue sticks, hand wipes, all for less than $500. We diverted one of our student positions to handle the daily task of reading and clipping the papers.

The computer, desk, chair, individual newspaper note tags, pens, date stamp and ink pad were all items that we already had on hand. We got two large shelves from the campus surplus.

Clipper – job description

Because the skills required for this position are fairly universal in college students, a large pool of potential employees was available locally from Texas A&M University and Blinn College. The job description posted the following duties:

• Search through daily newspapers to find stories referring to agriculture, especially to the Texas A&M University System Agriculture Program and its personnel.

• Cut news articles from the paper, scan them, organize hard copy using specified system and enter data about articles via online database.

• May do computer searches to find placement of Agriculture Program news articles.

• Generate reports from the database as requested.

•Must be able to work 20 hours a week in at least 4-hour blocks.

Qualifications:

• Must have a good command of English language (both spoken and written),

• Must be able to recognize targeted articles,

• Must use computer for data entry. Knowledge of scanning preferred.

• Interest in journalism and the news business is a plus.

Clipping directions

The following directions were provided to the student worker but also throughout the unit because anyone who had free time was encouraged to clip newspapers:

* Remove the ad inserts, classified section and other non-news items and place in the recycle bin or trash.

* Read the paper for any reference to agriculture (local, state, national, international), the Texas A&M Agriculture Program, stories released by Texas A&M's Ag Comm-News, and articles mentioning or quoting Agriculture Program researchers/Extension personnel. Be sure to include articles pertaining to the Agriculture Program's Family and Consumer Sciences.

* Cut out any article found to contain any of the above (making sure that no pertinent story is on the back of it)

* Attach a note to the paper to include the information needed for the database: name of the newspaper, the date, the page on which the article appeared, the agency, the researcher/Extension person named or quoted; whether the writer is a county agent; the academic department to which that person is assigned. (Circulation of the paper is automated in the database) These notes are in a word processing file which can be copied as needed. Attachment is simplest with a glue stick.

* Scan articles into a searchable text file using OCR software. Store these articles in computer file folders by expert name, date and a file extension for the newspaper code (Ex: w:\news\clips\Pike0702.dmn for a story about Pike on July 2 in the Dallas Morning News). This enables us to get lists of stories by expert, by date or by newspaper.

* Make a copy of each article. File this copy in the binder for the designated newspaper, behind the tab for that month.

* The clipped articles go weekly to the Main Office bulletin board for display and, upon removal at the end of a week, are routed to the writers who may keep them for their files and report to sources.

* Clipped/used newspapers are put into the newspaper recycle bin and regular dumps are arranged through custodians.

* Enter clip information into online database

As part of the protocol for the clipper, there is a list of Texas A&M Agriculture Program references for each paper to indicate counties/facilities to watch for in that paper. These are kept in a notebook with a plastic sleeve for each newspaper, alphabetized by city. Inserted into the sleeve is the list of Ag Program entities that are located in the newspaper's coverage area.

Office Space

Creating space to house the clipping effort took some creativity. We needed an area that had shelves for 30 binds and the newspapers to be stacked, as they arrived, in alphabetical order by city, a computer suitable for data entry, supplies such as scissors, glue sticks and labels, a recycle bin and reading space. The space needed to be fairly secluded to allow for an uninterrupted work atmosphere.

We determined that part of an open reception area could be reconfigured to accommodate the effort. To separate it from traffic flow, we aligned bookcases with their backs to the doorway, forming a cubbyhole on one end of the reception area. A workspace and a computer desk were positioned in an L-shape across from the shelves and a large, rolling recycle bin was situated close to the opening for easy removal. The work area was about 7x12 feet.

Database design

An online form was devised to allow for easy input and report generation. The form allows for quick, radio-button or drop-down selection of the newspaper (linked to its circulation), date, section, page number, agency, whether the article is Agriculture Program related, academic department, center/station and whether the article was a county Extension agent column. The information that is manually input includes the headline, the researcher/Extension person(s) quoted, and the article's writer.

Because this information is entered into a database, it can be downloaded at any time to do reports. The information that could be compiled from this database would include:

* total number of articles placed
* total number of newspapers in which an article placed
* total number of newspapers in which at least one article placed
* time line of when most articles appear (more in summer? More in December?)
* category of articles most likely to run (by academic department, topics)
* Number of page one articles (or other section of placement)
* Articles by/about individual employees (ex: number of articles on Pike)
* Number of articles generated from each center/station
* Total circulation of readers for each story
* Total circulation of readers for all news stories that have been placed in a given time
* Total circulation for readers for all stories in a given category
* Information about stories/readership by agency
* Number of county agent articles

* Articles by newspaper (ex: all Dallas Morning News clips)

Because so many different parameters were included in the input, our computer specialist has indicated that a wide variety of additional reports may be possible to generate beyond what was set up on the online report statistics mechanism.

**Results/Outcomes**

This experiment was twofold in that it gave us the opportunity to design a clipping effort that best fits a state agency news bureau, and it provided us with data on which to judge the value of our news effort against the larger picture at Texas dailies.

The clipping method worked well. In the year-long effort, we amassed a database with some 3,000 clips, categorized by keywords that parallel Texas A&M Agriculture Program efforts. About one-third of the articles had a Texas A&M Agriculture Program connection.

This database is a baseline from which future studies could be judged. It was flexible enough to change and improve upon throughout the year. With some minor changes, which will be mentioned in the discussion section, we decided to continue the clipping effort for the coming year.

The data derived from the clips yielded results that likely will be looked at and rehashed for months if not years. The information one can pull from the massive amount of data will depend on one's interest. For our objectives, we wanted to know how much coverage agriculture was getting in the state's largest dailies and how much of that coverage included the Agricultural Program.

First, not surprisingly, each of the 30 papers ran at least some agriculture news.

The fewest number of agriculture-related articles was in the Port Arthur News with 10 articles between Sept. 1, 2002 and Aug. 31, 2003. This 18,792-circulation daily is in the far southeastern part of Texas near the Louisiana border. Its industries pertain more to shipping and petrochemical production than to agriculture, but there is rice milling and food processing nearby. There also are wildlife and fisheries concerns that would fall under the Texas A&M Agriculture Program umbrella. Examination of the 10 articles during the year included three by the county Extension agent, two about crops or livestock, three about wildlife and fisheries, and one about food.

The largest number of agriculture-related articles in the same time frame was the San Angelo Standard-Times, circulation 30,117. This newspaper, which has a reporter designated to cover agriculture, ran 257 agriculture-related articles from Sept. 1, 2002-Aug. 31, 2003. On average, the San Angelo paper had an agriculture-related story in about 70 percent of its issues.

The San Angelo Standard-Times had far and away more agriculture coverage than any other daily in the study, but about one-third of the newspapers examined had agriculture-related stories about one-third of the time, or at least 120 articles in the year-long study. Six of those 10 newspapers have a reporter designated for agriculture coverage and at least two of them have special agriculture sections.

In addition to finding out where most of the news stories ran, tracking the types of articles also provides information on pursuing news angles with these papers.

The most popular agriculture-related issue covered was gardening with 534 articles, 18 percent of all the articles clipped. But production agriculture articles were a close second with 478 articles, or 16 percent. Other topics garnering more than 100 articles in the year included

health with 339, families and youth with 256, wildlife with 230, business with 214, environment with 125 and policy with 110.

**Discussion/Conclusion**

Setting up the clipping service initially required much attention to detail and then some tweaking as the envisioned project unfolded into reality.

One of the most difficult hurdles to jump was subscribing to the papers. State rules prohibit us from paying for items or services before they are received. Likewise, most of the newspapers have rules that prevent them from allowing a year-long, mailed subscription to begin prior to payment. In most cases, the newspapers have individualized computer software that prevents a circulation clerk from processing a subscription without prior payment. This required us to individually call the circulation manager at each of the 30 papers to request permission for the subscription to begin.

When 30 dailies began showing up at the office, many personnel began showing up to find their hometown newspaper or to seek out ads, coupons, sports stories and other features of the papers. We had to initiate a rule that prevented anyone other than a designated clipper from taking a newspaper to prevent the loss of articles.

Clipping 30 dailies every day – 210 newspapers a week – and searching for every article that referenced any of the agricultural and family/consumer science topics that could pertain to the Agriculture Program was cumbersome. When the student clipper went home at Christmas and spring break, the newspapers would continue to stack up. Secretarial help and assistance from other unit student workers was sought when those people had time. Inevitably, the clippers would get caught up. The most serious backlog occurred when the original clipper graduated in

the spring, so quit working at the end of April. The summer replacement student was not able to start working until June 1 and had to return to her graduate student position on Aug. 31. Therefore, an entire month of papers was backlogged. This happened at a time when state budget cuts caused some reduction in staff who had been helping to clip (a secretary retired and one student position was not staffed in the summer). The August papers, marking the end of the year-long study, were not completed until Sept. 24, 2003.

Despite the buildup, it was decided that all 30 papers should be clipped for at least another year. In hopes of eliminating the buildup of papers that results from student schedules, however, two students were hired to handle clipping for the 2003-04 project.

Another change for 2003-04 is that only articles that refer to the Texas A&M Agriculture Program (its agencies and college) will be clipped. Though all of papers will have to be read as painstakingly as in the first year, we will examine whether the reduction in the number of clipped and database-entered articles will make a difference in the time required by the clipping service. This does result in an additional cost which, we were able to bear with the help of some grant funds. We do not need additional equipment, except for occasional supplies (hand wipes and glue sticks). The cost of the subscriptions for the coming year are roughly the same.

When we got behind in the clipping due to student and staff changes, we discontinued the scanning of articles. With one clipper and hundreds of articles being found during the summer months, scanning became a low priority. With the beginning of the 2003-04 project, we plan to restart the scanning of our articles for archival purposes since this year's project will include only Agriculture Program articles.

A change in the work space area was required due to a total revamp of the Agricultural Communications unit. An area formerly occupied with various storage items and a printer was

cleared toward the back of our office suite. The bookshelves were used there, but the desk and computer table were replaced with a more narrow table along the wall in a 7x9-foot area.

Acting on advice to include as many parameters as one can think of for the database was a good decision. The database is proving useful for items not originally considered, such as the number of agriculture-related stories that appeared on Page One. The recommendation is to always include data in as automated way as possible as it may be used later.

After a year of collecting data, however, we are examining the database structure to see if it mirrors the reality of newspaper publishing. For example, we started the database with 16 categories that roughly align with the Agriculture Program's academic departments. Early in the project, we determined that some articles did not fit within those categories, so we added an "other" line and the option for the clipper to fill in a word to describe those articles.

Information gleaned from the other category indicates that some of the categories need to be better explained to the data entry person and some additional categories need to be added for the second year of this project.

One of the uses that we didn't foresee was for visits with newspaper staffers that we previously had not met with. Most of the planning had agriculture/business writers and lifestyles editors in mind. Our news team now has plans to visit the managing editors and web editors, in addition to agriculture writers and lifestyles editors, at each of the 30 papers by the end of the calendar year. Meeting with the managing editor, for example, and showing the list of all agriculture stories printing in his/her paper for the past year has proven useful in opening discussions about the need and plans for coverage of this massive industry in Texas.

Without a doubt, this method of clipping is more expensive than perhaps any other commercial service offered. However, there is no other service we have found that meets our

precise needs. We have chosen to put budget for this effort in order to track our results and, thus be better equipped to communicate with the pubic through the news media.

The data shows us which papers are more likely to cover agriculture at this point and how much of the data pertained to the Texas A&M Agriculture Program. That information also gives us a clear picture of where we can continue to build on existing relationships and where we need to followup to increase coverage of agriculture and of our agencies. The data also will be used to examine identity issues for the Agriculture Program agencies and a variety of other issues.

At some point in the future, we believe it would be good to again clip for all references to agriculture. That data could give us a measure to compare with the baseline we generated in 2002-03.

**References**

Phillips, K., G. Farrell, T. Inbody, M. Downey, 2000. Texas A&M Communicators Clipping Service Survey Results. Aug. 22, 2000. Paper presented to TAMCOM members.

Texas Press Association. Viewed online 09/23/03. **Http://www.texaspress.com**

# Selected Texas Agricultural Commodity Board Members' Perceptions of the 2002 U.S. Farm Bill

Christa L. Catchings[1]

Gary J. Wingenbach[2]

Texas A&M University

Department of Agricultural Education

2116 TAMU

College Station, Texas 77843-2116

Phone: 979-862-1507

FAX: 979-845-6296

Email: ccatchings@aged.tamu.edu

g-wingenbach@tamu.edu

[1] Christa Catchings is a graduate research assistant in the Department of Agricultural Education at Texas A&M University.

[2] Gary J. Wingenbach is an assistant professor of agricultural communications and journalism in the Department of Agricultural Education at Texas A&M University.

Abstract

Cooperative Extension Service personnel play a major role in educating the public about U.S. Farm Bills. The purpose of this study was to determine selected Texas agricultural commodity board members' perceptions of the 2002 U.S. Farm Bill. Board members representing the Texas Corn Growers, Cotton Growers, Grain Sorghum Producers, and Wheat Producers Associations responded. Respondents ($N = 50$) were mostly male, represented a cotton growers association, and were 46 to 55 years old. Respondents ranked farm commodity programs, disaster assistance, and international trade as the most important 2002 Farm Bill programs. Respondents strongly agreed that their respective organizations influenced the final outcome of the 2002 Farm Bill. Extension/University and Internet were rated as good information sources to learn about the farm bill. Cotton association board members perceived organizational influencers had more, and corn board members perceived organizational influencers had less effect on the final outcome of the 2002 Farm Bill.

Additional research is needed to determine if agricultural commodity board members used the Internet to access agricultural policy information from Extension service and/or university-based Web sites. Continued work in gathering agricultural commodity board and organization members' input will be beneficial to policy makers as new farm bills are crafted, debated, enacted, and implemented. Equally, agricultural commodity board and organization members' perceptions about farm bill educational materials developed by agricultural communications professionals and/or Cooperative Extension Service personnel will improve the processes for educating the public about the 2002 U.S. Farm Bill.

Keywords: Communications, U.S. Farm Bill, Agricultural Commodity Boards, Texas, Extension

## Introduction

When the U.S Farm Bill is being formed, state-level agricultural commodity board members consider the advice of national and congressional leaders and lobbyists working on their behalf. State-level agricultural commodity group members' perceptions may be influenced by this advice. Several questions may be derived from this observation. Do state-level agricultural commodity board members perceive their organization's U.S. Farm Bill interests from a local or national perspective? What issues, if any, in the U.S. Farm Bill are most important to agricultural commodity group board members? Do they communicate their commodity group's farm bill interests to local members in an unbiased manner?

## Conceptual Framework

The U.S. government's role in farm policy changes every six years. During the initial debates and policy formation processes, national commodity board members and congressional leaders create the farm bill provisions, which affect agricultural producers nationwide. Current and future leaders of agricultural organizations may not have the abilities to assess accurately their member's contributions to the farm bill. Researchers (Mark, Daniel & Parcell, 2002) found producers' and non-producers' needs and perceptions of farm bill provisions useful to policy makers in the development of the 2002 Farm Bill. Most commodity organizations make valid attempts to provide input to the farm bill, but research is vague regarding the value of this input (Sulak, 2000).

During the 1930s, when farm commodity programs started, farm organizations began losing political influence (Sulak, 2000). The loss of political influence was caused by commodity legislation directly impacting particular groups (Bockstael & Just, 1991). Agricultural organizations play an integral role in farm policy enactment and implementation. For the past

70+ years, farm policy makers have treated agricultural organizations as mediums of information and communication. Farm organizations tend to emphasize economic issues and the general farm program framework (Morrison, 1970). In the past, most agricultural committees were concerned with world trade, competition in the world market, and efforts to reduce the influence of the government in farm programs (Westcott, Young, & Price, 2002). U.S. agricultural policy has focused on distribution of the nation's vast land resources, increasing the productivity and standard of living of American farmers, and assisting farmers in marketing their product (Westcott, Young, & Price, 2002). Many farm policies have helped reduce federal involvement, while increasing programs that were geared toward market orientation in the agricultural sector (Young & Westcott, 1996).

The 2002 Farm Bill, "The Farm Security and Rural Investment (FSRI) Act of 2002," was the most argued piece of legislation in the USDA's history. The scope and complexity of the new farm legislation suggests that the Farm Service Agency (FSA) and other USDA agencies have a large task of creating regulations to implement FSRI, while educating producers of the provisions, alternatives, and benefits available to them (Mark, Daniel, & Parcell, 2002). The House Agriculture Committee held several hearings allowing commodity groups to present specific recommendations for the new farm bill. Most recommendations raised were similar to those of found in previous farm bills. The recommendations included enhancing risk management, assurance in income safety nets for producers, improvements in the agriculture trading sector, and assisting smaller and limited-resource farms.

Sulak (2000) found national agricultural commodity organization leaders deemed commodity programs as the most important provision in the 1996 FAIR Farm Bill. The same 26 leaders believed international trade programs were the second most important provision. Sulak

noted that agricultural commodity board leaders should be, but were not, concerned about environmental and international trade programs. Respondents believed their respective organization's members were pleased with the FAIR Farm Bill. Also, leaders perceived that the Agriculture Committee Chairs and congressional leadership influenced the 1996 Farm Bill formation process most, while the Clinton Administration influenced it the least. Sulak concluded that national agricultural commodity organizations had little or no influence on the final outcome of the 1996 Farm Bill. Sulak stated that depending on the particular commodity, support or opposition of the farm bill varied.

Sulak's (2000) study indicated a need for agricultural organizations to join coalitions to gain strength in influencing agricultural policy development. She recommended additional research to understand agricultural commodity organizations leaders' and members' needs in future farm bills. An understanding of their needs may help determine strengths and weaknesses of an organization's role in agricultural policy development. Educators and land-grant universities play an important role in providing options/assistance to producers while new farm bills are being formed.

Mark, Daniel, and Parcell (2002) studied Kansas producers and agribusiness professionals' perceptions of the changes in agricultural policy from 1996 to 2000. The study showed changes occurred in producers' perceptions of federal agricultural policy, fostering immediate interest in the FAIR Act's impacts on farm income, income variability, land values, and crop acreage mixes. In this study, Kansas producers' perceptions were generally favorable toward the FAIR Act. The results showed producers' and non-producers' perceptions of FSRI were useful to policy makers and agricultural interest groups preparing FSRI 2002. The authors reported that "decision to retain elements of previous farm programs, with modification, in the

2002 farm program was based, as least partially, on producer preferences for those elements and their perception of how they would benefit from the program as their operations changed in the future" (pg. 3). Even though the researchers used small and nonrandom samples, the producer information regarding farm policy can be useful to policy makers evaluating differences in policy impacts for farming operations of various sizes or geographic location.

Mark, Daniel, and Parcell (2002) noted that because farm policy is created with consideration given to producers' and agribusiness persons' perceptions, it is important to gather such information. This information could be used by policymakers to help create future farm bills that better fit what producers and agribusiness people need, while monitoring how well the current farm bill meets their needs. Cooperative Extension Service personnel are often in good position to help gather this information. Additional efforts are needed in gathering consumers' perceptions of agricultural policy in the future.

## Purpose and Objectives

The purpose of this study was to assess selected agricultural commodity board members' (Texas Grain Sorghum, Corn, Wheat and Cotton Associations) perceptions of the 2002 U.S. Farm Bill. The following objectives guided this study.

1. Determine the most important producer programs in the 2002 Farm Bill.
2. Describe organizational support of the primary issues in the 2002 Farm Bill.
3. Determine organizational influencers affecting the final outcome of the 2002 Farm Bill.
4. Describe the sources of information for understanding the 2002 Farm Bill.
5. Determine if relationships existed between respondents' perceptions and selected demographic variables.

## Methods

A descriptive survey design was employed in this study. The target population was all Texas agricultural commodity board members representing the Corn Producers, Cotton Growers, Grain Sorghum, and Wheat Producers Associations. The target population ($N = 256$) represented the major Texas agricultural commodity groups who had a vested interest in the 2002 Farm Bill. The accessible population was considerably less ($n = 100$), due to commodity boards' privacy concerns about the release of their members' personal information.

A stratified-random sample ($n = 80$) was used to elicit respondents' participation in the study. Kumar (1999) stated a stratified-random sampling method reduces the heterogeneity in a population. Basically, a stratified-random sample ensures that groups in the population are adequately represented (Gall, Borg, & Gall, 1996). Questionnaires, cover letters, and return envelopes were sent to commodity board directors in mid-fall 2002, with instructions to distribute, collect, and return the instruments after their annual winter board meetings. Only one response was collected from the grain sorghum association, thereby eliminating or severely limiting their inclusion in this study. A 63% response rate was attained from corn, cotton, wheat, and grain sorghum commodity board members. Despite repeated and unsuccessful follow-up procedures to non-respondents, caution is warranted against generalizing the results of this study beyond the accessible population.

A modified version of Sulak's (2000) 1996 Farm Bill Survey was used to collect the data. The survey instrument contained a total of 20 questions with multiple parts to each question. Producer program importance was measured using a rank order list of six major programs (farm commodity programs; conservation, environment and water quality programs; disaster assistance programs/crop insurance; international trade programs; foreign food aid programs; and

promotion programs/check-off) in the 2002 Farm Bill. Organizational support of the primary issues was measured using an inventory (opposed, neutral, or support) on nine issues (target prices; decoupled payments planting flexibility; marketing loans; non-recourse loans; crop insurance; payment limitations; conservation compliance requirements; wetland protection; and environmental quality incentive program) in the farm bill. Organizational influencers affecting the final outcome of the 2002 Farm Bill were measured using a Likert-type scale (1 = strongly disagree…4 = strongly agree). The value of commodity board members' sources of information were measured using a similar Likert-type scale (1 = poor…4 = excellent). A Cronbach's alpha coefficient of .63 was produced for the organizational influencers scale, and .76 for the sources of information value scale in this study.

Content and face validity were established by a panel of experts from Texas agricultural commodity board members who did not participate in this study. The instrument was field-tested prior to data collection and approval to perform the study was granted by the Texas A&M University Institutional Review Board (#2002-548). Minor editing (wording) changes were made to the final version of the research instrument. Demographic data were analyzed using descriptive statistics. Significant relationships were explored using bivariate analyses.

## Results

Respondents were mostly male (98%), represented a cotton growers association (66%), and were 46 to 55 years old (46%). They had attended college or completed an undergraduate degree (80%), were raised on a farm or ranch (74%), and currently owned a family-operated farm or ranch (98%) (Table 1).

Table 1

*Demographic Frequencies of Respondents (N = 50)*

| Variables | | *f* | Percent[a] |
|---|---|---|---|
| Gender: | Male | 49 | 98 |
| Commodity organization: | Cotton | 33 | 66 |
| | Corn | 11 | 22 |
| | Wheat | 5 | 10 |
| | Grain Sorghum | 1 | 2 |
| Age: | 46-55 | 23 | 46 |
| | >56 | 17 | 34 |
| | 36-45 | 5 | 10 |
| | 26-35 | 4 | 8 |
| Education: | Undergraduate degree | 26 | 52 |
| | Attended college | 14 | 28 |
| | High School diploma | 5 | 10 |
| | Masters degree | 2 | 4 |
| | Doctoral degree | 2 | 4 |
| Location where raised: | Rural farm/ranch | 37 | 74 |
| | Rural Community | 7 | 14 |
| | Town (5,000-50,000) | 2 | 4 |
| | Small City (50,001-200,000) | 2 | 4 |
| Family-owned farm or ranch: | Yes | 49 | 98 |

*Note*. [a]Frequencies may not equal 50 because of missing data.

To complete the first objective, respondents' were asked to rank order the most important producer programs in the 2002 Farm Bill. Six programs (Sulak, 2000) were included to determine respondents' perceptions of farm bill programs impacting their respective agricultural commodity organizations (Table 2). Respondents ranked farm commodity programs, disaster assistance, and international trade as the most important 2002 Farm Bill programs. Foreign food aid, promotion/check-off, and conservation programs were ranked least important.

Table 2

*Respondents' Ranking of Important Producer Programs in the 2002 Farm Bill (N = 50)*

| Programs | Ranking Frequencies[a] | | | | | | Overall Rank[b] |
|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | |
| Farm commodities | 44 | 3 | 2 | — | — | — | 1 |
| Disaster assistance/crop insurance | 6 | 29 | 4 | 9 | 1 | — | 2 |
| International trade | 3 | 10 | 12 | 12 | 11 | — | 3 |
| Conservation, environment and water quality | 1 | 2 | 21 | 9 | 13 | — | 4 |
| Promotion/check-off | 8 | 2 | 9 | 9 | 13 | — | 5 |
| Foreign food aid | 1 | 1 | 4 | 3 | 10 | 2 | 6 |

*Note*. [a]Frequencies may not equal 50 because of missing data. [b]Overall rank was determined by weighting raw scores in reverse order; 1st place scores received six points each, while 6th place scores received one point each. Individual weighted scores for each program were summated to derive the overall rank.

Organizational support of the nine primary issues in the 2002 Farm Bill was measured using an inventory (opposed, neutral, or support). Respondents indicated their organization's initial position to each issue before it became a part of the farm bill (Table 3). Selected Texas agricultural commodity board members believed their organizations initially were most supportive of issues concerning target prices, marketing loans, and planting flexibility (88%, all). Least supported (10%), and most opposed (78%), was the issue of payment limitations (Table 3).

Table 3

*Frequencies of Respondents' Perceptions of Organizational Support for Primary Issues in the 2002 Farm Bill (N = 50)*

| | Opposed | | Neutral | | Support | |
|---|---|---|---|---|---|---|
| Issues | *f* | Percent[a] | *f* | Percent[a] | *f* | Percent[a] |
| Target prices | | | 4 | 8 | 44 | 88 |
| Marketing loans | 3 | 6 | 2 | 4 | 44 | 88 |
| Planting flexibility | 3 | 6 | 2 | 4 | 44 | 88 |
| Crop insurance | | | 7 | 14 | 40 | 80 |
| Non-recourse loans | 3 | 6 | 4 | 8 | 38 | 76 |
| Environmental quality incentive program | 3 | 6 | 8 | 16 | 33 | 66 |
| Conservation compliance requirements | 6 | 12 | 21 | 42 | 16 | 32 |
| Wetland protection | 4 | 8 | 31 | 62 | 10 | 20 |
| Payment limitations | 39 | 78 | 5 | 10 | 5 | 10 |

*Note*. [a]Percentages may not equal 100% for each issue because of missing data.

To complete the third objective, respondents were asked to record their agreement levels for 12 statements measuring their perceptions of organizational influencers affecting the final outcome of the 2002 Farm Bill (Table 4). Respondents strongly agreed that their respective organizations influenced the final outcome of the 2002 Farm Bill ($M = 3.52$). They agreed that farm organization coalitions were essential for enacting the 2002 Farm Bill ($M = 3.49$). They disagreed with the statement that their organizations' policy influence had decreased with the current farm bill, more than it had compared to previous farm bills ($M = 1.84$) (Table 4).

Table 4

*Descriptive Statistics for Agricultural Commodity Board Members' Perceptions of Influencers Affecting the Final Outcome of the 2002 Farm Bill (N = 50)*

| Statements | *M* | *SD* |
|---|---|---|
| Your organization strongly influenced the final outcome of the 2002 Farm Bill | 3.52 | .65 |
| Farm organization coalitions were essential for enacting the 2002 Farm Bill | 3.49 | .77 |
| Ag Committee Chairs influenced the 2002 Farm Bill more than in previous farm bills | 3.19 | .67 |
| Farm organizations had more influence than agribusinesses on the 2002 Farm Bill | 3.16 | .62 |
| Congressional leadership influenced the 2002 Farm Bill more than previous farm bills | 2.96 | .70 |
| Environmental interest groups influenced the 2002 Farm Bill more than previous bills | 2.94 | .63 |
| Environmentalists' interests were opposite of farmers for the 2002 Farm Bill | 2.89 | .91 |
| Non-farm interest groups strongly influenced the 2002 Farm Bill | 2.84 | .80 |
| Agriculture Subcommittees influenced the 2002 Farm Bill more than in previous bills | 2.77 | .60 |
| The 2002 Farm Bill has more impact on farm production than previous farm bills | 2.66 | .73 |
| Agribusinesses had more influence than farm organizations on the 2002 Farm Bill | 2.23 | .67 |
| Your organization's policy influence in the 2002 farm bill decreased compared to previous farm bills | 1.84 | .66 |

*Note*. A Likert-type scale (1 = strongly disagree…4 = strongly agree) was used to measure board members' perceptions of influencers affecting the final outcome of the 2002 Farm Bill.

The value of commodity board members' sources of information for education about the 2002 Farm Bill was measured using a Likert-type scale (1 = poor…4 = excellent). Respondents rated seven sources of information used to learn about the farm bill (Table 5). Selected agricultural commodity board members rated Extension/University ($M$ = 3.13) and Internet ($M$ = 2.83) information sources as "good." Radio, television, and newspapers ($M$ = 2.17) and congressional reports ($M$ = 2.33) were rated as "fair" sources of information used to learn about the 2002 Farm Bill (Table 5). No information sources achieved an overall rating of "excellent."

Table 5

*Descriptive Statistics for Agricultural Commodity Board Members' Perceptions of Information Source Value in Learning about the 2002 Farm Bill (N = 50)*

| Statements | *M* | *SD* |
|---|---|---|
| Extension/University | 3.13 | .87 |
| Internet | 2.83 | .99 |
| Magazines, journals, farm publications | 2.63 | .76 |
| Satellite technologies | 2.51 | .83 |
| Consultants | 2.50 | .80 |
| Congressional reports | 2.33 | .82 |
| Radio, TV, newspapers | 2.17 | .93 |

*Note*. A Likert-type scale (1 = poor…4 = excellent) was used to measure board members' perceptions of the value of information sources used to learn about the 2002 Farm Bill.

To fulfill the fifth objective, respondents' perceptions of influencers affecting the final outcome of the 2002 Farm Bill, and value of information sources used to learn about the 2002 Farm Bill were summated and correlated with selected demographics (commodity organization type, age, location where raised, and education) to determine if significant relationships existed (Table 6). Because the lone sorghum board member returned incomplete data, those results were not included in the correlational analyses. Therefore, the categories of agricultural commodity organization type, age, location where raised, and education were coded as multichotomous nominal variables. Pedhazur's (1982) convention for dummy coding the variables was used. Davis' (1971) convention was used to describe the magnitude of relationships. Relationships between multichotomous nominal and interval variables were analyzed as Cramer's V correlations (Hinkle, Wiersma, & Jurs, 1994).

A significant, moderate relationship ($r$ = .41) existed between the perceived levels of influencers affecting the final outcome of the 2002 Farm Bill and cotton board members (Table 6). The relationship indicates that cotton association board members perceived organizational

influencers affected the final outcome of the 2002 Farm Bill more ($M$ = 34.70) than did board members from other agricultural commodity organizations ($M$ = 32.98). Also, a significant, moderate negative relationship ($r$ = -.34) existed between the perceived levels of the influencers and corn board members. This inverse relationship indicates that corn association board members perceived organizational influencers had less ($M$ = 29.18) effect on the final outcome of the 2002 Farm Bill than did board members from other agricultural commodity organizations. The final significant, "very strong" negative relationship between cotton and corn board members merely indicates that the dummy-coding schema used was diametrically opposed (Table 6).

Table 6

*Significant Correlation Coefficients among Selected Variables (N = 50)*

| Variables | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Influencers affecting the final outcome of the 2002 Farm Bill | - | -.03 | -.34* | .41** |
| 2. Value of information sources to learn about the 2002 Farm Bill | | - | .09 | .09 |
| 3. Corn[a] | | | - | -.74** |
| 4. Cotton[a] | | | | - |

*Note*. [a]Multichotomous nominal variables; reported as Cramer's V correlation coefficients.
*p<.05
**p<.01

## Conclusions, Recommendations, and Implications

A limited response ($N$ = 50) to this survey does not lend itself well to making sweeping statements about all Texas agricultural commodity board members, but does give insights into the make-up, perceptions, and values of those who did respond. Not surprisingly, respondents were male, 46 years old or older, reared in a rural location, and operated their family-owned farms or ranches. The vast majority had attended college or held an undergraduate degree, which

bodes well, when coupled with age and experience, for the leadership being provided to the corn, cotton, and wheat commodity boards.

One of the primary recommendations resulting from this study emanates, not from the data collected, but from the lack of responses produced. Although agricultural commodity board members value privacy of membership information, a true and accurate accounting of their or their members' perceptions about U.S. agricultural policy cannot be ascertained without greater access to the population of interest. Without adequate access, state- and national-level policy makers can only speculate what agricultural commodity organization members think about the policies affecting producers nationwide. Increased cooperation between Texas agricultural commodity organizations and researchers is needed to gather accurate perceptions about the 2002 Farm Bill.

Respondents valued target prices, marketing loans, and planting flexibility issues most in the 2002 Farm Bill. True to their nature, board members perceived these programs had the most impact on their organizations, and probably held the greatest relevance to their livelihoods. This finding mirrors what was found in an earlier study of national commodity board leaders (Sulak, 2000). Another similarity between Sulak's study and this one was that respondents did not perceive the importance of environmental or international issues highly. Texas agricultural commodity board members were not that different than their national counterparts, but this finding reveals an educational need exists to help commodity board members better understand the interconnectedness of domestic and foreign agricultural markets and production and environmental stewardship.

Concerned that the 2002 Farm Bill would compromise their livelihoods, Texas agricultural commodity board members believed their respective organizations initially opposed

payment limitations. Womack (2002) stated that payment limitations would require agricultural commodity board leaders and members to seek help from the Secretary of Agriculture in establishing procedures to clarify and better identify the payments to individual producers. Womack believed that payment limitations could limit agricultural commodity organization members' ability to produce crops because it puts a cap on eligibility for participation in farm programs. Farm programs would have an overall reduction; limits would be put on direct and counter-cyclical payments.

A shift in perceptions of organizational influencers affecting the final outcome of a farm bill occurred between national (Sulak, 2000) and state-level commodity board members. In Sulak's study, commodity board leaders perceived that the agriculture committee chairs and congressional leadership had the most influence on the 1996 Farm Bill formation process. Sulak concluded that national agriculture commodity organizations had little or no influence on the final outcome of the 1996 Farm Bill. Respondents in this study perceived their respective organizations strongly influenced the final outcome of the 2002 Farm Bill. This shift in perception may be related to the multitude of House Agriculture Committee hearings that allowed commodity groups to present specific recommendations for the new farm bill (Mark, Daniel, & Parcell, 2002). Too, it could be the result of a homogenous respondent group's collective perception that their organization's input had great impact in forming the 2002 Farm Bill. Regardless, continued work in gathering input from agricultural commodity board and organization members will be beneficial to policy makers as new farm bills are crafted, debated, enacted, and implemented.

An important finding in this study was the value commodity board members placed on the Cooperative Extension Service and the land-grant University as an information source for the

new farm bill. Respondents valued these sources, and the Internet, more so than they did for radio, television, or newspapers. It was not clear if board members used the Internet to access Cooperative Extension Service information, but the implication exists that a combination of Extension/University and Internet sources can be a powerful conduit to increase understanding in future farm bills. Cooperative Extension Service faculty and staff can use this finding to ensure their farm bill, and other agricultural policy materials, are up-to-date and posted in an easily accessible manner on the Internet. Additionally, state departments of agriculture may use this result to enhance their own Web sites, while focusing less effort on producing education resources that are radio, television, or newspaper-based. Additional research is needed to determine if agricultural commodity board members are using the Internet to access agricultural policy information from Cooperative Extension Service and/or university-based Web sites. Also, research to determine if commodity board leaders or members can distinguish differences between information sources and channels may help clarify agricultural communications research.

Selected Texas agricultural commodity board members held dissimilar beliefs about an organization's influence on the final outcome of the 2002 Farm Bill. Cotton association board members felt their organization influenced the final farm bill outcome more than did the corn association board members. We were aware that these relationships may be due to actual statistical significance, or they may be the result of a small homogeneous subset of respondents. Additional research, with a larger, more diverse sample will help elucidate these findings. Also, research conducted over time will aid in understanding the relationships between agricultural commodity board members' perceptions of and influences on the final outcome of future farm bills.

A lesson can be learned from Mark, Daniel, and Parcell (2002) that agriculturists' perceptions do change over time and these changes impact agricultural policy at the national level. Farm policy is not enacted in spite of our nation's agriculturists it is enacted because of them. Additional efforts are needed in gathering, analyzing, and reporting agriculturists' perceptions of national agricultural policies. Mark, Daniel, and Parcell noted that the Cooperative Extension Service personnel play a major role in developing and delivering educational programs to educate the public about U.S. Farm Bills. Future efforts are needed in gathering data about stakeholders' perceptions of agricultural policy. Agriculturists' understanding of future farm bills will be dependent upon accurate data collected and used in developing valid and relevant Cooperative Extension Service educational programs.

## References


Bockstael, N., & Just, R. E. (1991). *Commodity and resource policies in agricultural systems.* Berlin: Springer-Verlag.

Davis, J. A. (1971). *Elementary survey analysis*. Englewood, NJ: Prentice-Hall.

Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. White Plains, NY: Longman Publishers, USA.

Hinkle, D., Wiersma, W., & Jurs, S. (1994). *Applied statistics for the behavioral sciences*. Boston: Houghton Mifflin Company.

Kumar, R. (1999). *Research methodology: A step-by-step guide for beginners.* London. Sage Publications.

Mark, D. R., Daniel, M. S., & Parcell, J. L. (2002, August) Gauging perceptions of farm programs. *Journal of Extension, 40*(4). Retrieved May 14, 2003, from http://www.joe.org/joe/2002august/rb2.shtml

Morrison, D. E. (1970). *Farmers' organization and movements. Research needs and a bibliography of the United States and Canada.* (Research Bulletin 24). East Lansing, Michigan: Michigan State University, Agricultural Experiment Station.

Pedhazur, E. (1982). *Multiple regression in behavioral research*. New York: Holt, Rinehart and Winston, Inc.

Sulak, M. (2000). *The impact of the 1996 Farm Bill on members of national commodity organizations as perceived by selected organizational leaders*. Unpublished doctoral dissertation, Texas A&M University, College Station.

Westcott, P. C., Young, C. E., & Price, J. M. (2002). *The 2002 Farm Act: Provisions and implications for commodity markets.* Washington, DC: U.S. Department of Agriculture, Economic Research Service.

Womack, A. (2002). The 2002 Farm Bill: Options and implications. Retrieved May 28, 2003 from http://recenter.tamu.edu/speeches/awrl2002.pdf

Young, C. Edwin, and Paul C. Westcott. (1996). *The 1996 U.S. Farm Act increases market orientation, AIB-726*. Washington, DC: U.S. Department of Agriculture, Economic Research Service.

# METHODS OF INFORMATION DISSEMINATION TO LIMITED-SCALE LANDOWNERS

D. Dwayne Cartmell II, Assistant Professor
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-0461
FAX: (405) 744-5176
E-mail: dcart@okstate.edu

Chandra L. Orr, Graduate Student
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-8135
FAX: (405) 744-5176

Danna B. Kelemen, Graduate Student
Oklahoma State University
448 Ag Hall
Stillwater, Oklahoma 74078-6031
Telephone: (405) 744-8135
FAX: (405) 744-5176
E-mail: dannak@okstate.edu

**Abstract**

Information and technology are ever-changing characteristics of the world in which we live. The Cooperative Extension Service strives to meet the needs of their audience by providing relevant information through a variety of informational outlets. Studies indicate that clientele preferences do exist and are dependent upon the audience itself. Therefore, the dissemination of information must be conducive to the needs. As the population moves from city dwelling to rural residency, the methods for information dissemination must be closely examined to determine the role of technology in dissemination and the role of demographics in preferred delivery method. This paper is a study of the informational needs of limited-scale landowners within the urban/rural interface of Lincoln County, Oklahoma, to address the methods of information dissemination by the Cooperative Extension Service and the role that demographic variables play in the preferred delivery method to intended audience members. Findings indicate that the Extension's audience prefers the use of direct mail as the primary method of information dissemination. The majority of the audience members owned a computer and a VCR and less than half used the Cooperative Extension Service. In cross-referencing age and education level with preferred sources of information, the study indicated that audience members, regardless of age and education level preferred direct mail as their source for information dissemination. Therefore the relationship in this study between age and educational level is inconclusive as it relates to preferred methods of information dissemination.

Key Words: Cooperative Extension Service, Extension, Limited-Scale Landowner, Urban/Rural Interface.

## Introduction

Information dissemination is a core principle of the Oklahoma Cooperative Extension Service (Orr, 2003). If information is to be used and empowering, it must be disseminated in a manner that best facilitates its reception. However, information is delivered in a multitude of manners and the challenge is to determine which method is most appropriate to the audience attempting to be reached. Knowing where people look for information is only half the battle for Extension communicators; but knowing where people find information is the other half (Pounds, 1985). Studies clearly show that clientele preferences do exist and may be quite different depending upon the audience being served. Considering the great variability among groups and indicated personal preferences, it is likely that no single delivery method is suitable for everyone (Richardson, 1995). Previous studies have noted that farmers' preferences for informational delivery methods depend on a variety of demographic characteristics such as age, income, formal education, and farm size (Iddings & Apps, 1992). Landowners living in the urban/rural interface have diverse interests and unique concerns (Creighton, Baumgartner, & Gibbs, 2002). The abundance of methods for disseminating information creates a need for Extension to know the types of technology its audience owns and/or regularly uses (Orr, 2003). Knowing the audience will assist the source in disseminating information in a method that is both well received and used.

## Purpose

The purpose of this study was to examine methods of information dissemination to limited-scale landowners in Lincoln County, Oklahoma.

## Research Objectives

(1) To determine the preferred information dissemination method/s of limited-scale landowners in Lincoln County, Oklahoma.

(2) To determine what method/s of information dissemination the Oklahoma Cooperative Extension Service uses to reach limited-scale landowners in Lincoln County, Oklahoma.

(3) To describe the technological capabilities of limited-scale landowners in Lincoln County, Oklahoma.

(4) To describe the preferred information dissemination method/s based on demographic variables of limited-scale landowners in Lincoln County, Oklahoma.

## Review of the Literature

For more than 75 years, Extension's mission has been the dissemination of information and knowledge derived from practical experience to help people lead more productive and satisfying lives (St. Clair, 2001). The Morrill Acts of 1862 and 1890 made possible the establishment of colleges for American citizens (1862, 1890). The Homestead Act of 1862 gave citizens the opportunity to own land of their own and encouraged agricultural practices on the land that helped to settle the United States (1862). The Hatch Act of 1887 provided federal funds for agricultural research at state colleges and universities, thus establishing agricultural experiment stations (1887). The Smith-Lever Act of 1914 set up the Cooperative Extension system of county agents (1914). All five Acts in early American history played a significant role in establishing agriculture as a mainstay of our country.

The Extension Service must be able to provide information that makes a difference (Astroth, 1990). Extension provides an important linkage between farmers and researchers, and

farmers have come to value the services they receive from Extension (Ekanem, Singh, Tegegne, & Akuley-Amenyenu, 2001). In a less-complicated time, the Cooperative Extension Service was simpler. The land-grant university research findings were disseminated directly to rural people by agents in the counties (Buford, 1990). The dawn of the information age has forced Cooperative Extension to radically change its methods of disseminating research-based information to clientele to compete with private enterprise and other educational institutions (Boldt, 1987). Today, as we navigate through the information and technology-laden world in which we now live, the sharing of information becomes easier and yet more complex. New methods for dispersing information have surfaced, yet not all individuals have adapted to this new form of communication via electronic media such as computers, television, VCRs, DVD players, and the Internet.

The challenge arises in how best to disseminate information to target populations. For the Cooperative Extension Service to best serve its intended audience, it needs to determine who its audience is and how to most effectively target and disseminate information to that audience (Orr, 2003). Not only does the Cooperative Extension Service strive to meet the needs of large production farms, but also it seeks to fulfill the needs of small-farm landowners, non-traditional producers, and homeowners (Polson & Gastier, 2001). Subsequently, because of a much broader audience today, Extension must seek the most effective means of reaching individuals based on their preferences for receiving information.

Agriculture remains the most important industry in rural America, but now employs relatively few people (Dillman, 1991). In addition, Dillman (1991) points out that more than 60% of all farm families rely on off-farm income to help support their lifestyles. As these changes occur, so too do the methods landowners use to obtain information. Research indicates

that people use different sources depending on the kind of information they are seeking (Pounds, 1985). One study showed that family, friends, and neighbors, along with newsletters, bulletins and fact sheets, magazine articles, printed dealer/sales materials, and farm organizations/associations were most frequently used as information sources (Phipps, Murphy, Maddox, & Neas, 2001). However, Richardson reported (1995) that an interesting finding showed that even though great diversity existed in the interests of the targeted audiences and the program focus for those audiences, their preferences of delivery methods were remarkably similar. The Cooperative Extension Service uses many methods to disseminate information to select audiences (Orr, 2003). Orr stated that while Extension still uses meetings, on-farm visits, and field days to some extent, much information also can be found in media formats such as the Internet, videos, and computer software packages. Thus, the need to know the audience is imperative to determine the preferred methods of information dissemination.

In urban counties and counties adjacent to urban areas, the farm population is an even smaller proportion of the rural population due to the increased movement of non-farm residents from city to countryside (Sharp, Imerman, & Peters, 2002). In Oklahoma, approximately 36.8% of the state's population (n=1,258,600) lives in the metropolitan areas of Tulsa and Oklahoma City (Population Statistics, 2003). In 2002, 33% of Oklahoma's population was classified as living in rural areas (Development Alliance, 2002). However, in Lincoln County, Oklahoma, the urban/rural interface between Tulsa and Oklahoma City, 82.8% of the population is considered rural (Development Alliance, 2002). As a result, there is a growing concern about the future of farming at the urban/rural interface (Sharp, Imerman & Peters, 2002). This trend in

Oklahoma alone indicates that the rural population is increasing and the need for information dissemination will likely rise accordingly.

## Methods

The research design used for this study was descriptive in nature using a telephone interview. Since the survey used a random sample, the data can only be generalized back to the original population.

The population was landowners who owned 50 acres of land or less (N=808) in Lincoln County. The landowners' information was compiled by the Lincoln County Cooperative Extension Service (Jones, 2001). Lincoln County was chosen in Oklahoma because of the concentration of limited-scale landowners, and it is an ideal representation of the urban/rural interface as it is located between Tulsa and Oklahoma City.

Individuals on the original list who were duplicates or did not have a phone number were removed from the population. The final population used in this study numbered 707. Using the final population number and the Krejcie & Morgan (1970) table, it was determined the study needed approximately 254 responses to reach a 95% confidence level so results could be generalized to the population. A random sample of the population was surveyed by the Oklahoma Agricultural Statistics Service who was hired to conduct the telephone interviews. The OASS generated 300 useable responses.

### *Instrument*

A 42-question telephone survey was developed to address the research questions determined by the researchers. A pilot study was conducted to determine the reliability and validity of the instrument. At the completion of the pilot study, data were analyzed and the instrument was revised to improve its validity and to reduce confusion on the part of the

respondents and those administering the survey. Feedback was encouraged from both the surveyors and respondents to generate a more precise and accurate survey for the main study. The questions contained in the survey consisted of short-answer questions, “yes/no” questions, interval questions, and multiple-choice questions. Those sampled in the pilot study were removed from the population to be used for the main study.

In the pilot study, some confusion arose on behalf of some of the participants to wording issues on the instrument. A committee was formed to review the pilot study, analyze the problem areas, and clarify the instrument. This not only made the survey easier to administer and respond to, but also allowed the results from the instrument to be more valid and reliable.

Reliability was assessed through the pilot study and was determined by the pilot study participants’ ability to consistently answer the questions without confusion. Since there were no scaled items in the instrument, it was unnecessary to run a Chronbach's Alpha.

A panel of experts consisting of faculty members from Oklahoma State University, the Associate Director of the Oklahoma Cooperative Extension Service, the Associate Director of the Oklahoma Agricultural Extension Service, and the State Statistician of the Oklahoma Agricultural Statistics Service were used to establish content validity of the instrument.

*Data Collection and Analysis*

The Oklahoma Agricultural Statistics Service administered the telephone survey between the dates of Nov. 12, 2002, and Nov. 20, 2002. A postcard was sent to potential respondents to notify the individuals several days prior to data collection of the upcoming survey. Both genders were surveyed; however, the gender was determined by the landowner who answered the phone.

Descriptive statistics were used for data analysis because of the nature of the study. Respondents were asked open-ended questions, "yes/no" questions, multiple-choice questions, and interval questions.

The data gathered from the instrument was statistically analyzed using the version 11.0 Window's Statistical Package for Social Sciences (SPSS) and hand analysis. The data was coded into SPSS to analyze non-inferential statistics.

## Findings

### *Findings Related to Information Dissemination Methods and Information Dissemination Methods Used by the Cooperative Extension Service*

The first and second research objectives of this study address the preferred information dissemination methods of limited-scale landowners in Lincoln County, Oklahoma, and the methods used by the Cooperative Extension Service to reach these landowners. To address these questions, it is necessary to know what percentage of respondents use the Cooperative Extension Service and for what purposes.

### *Limited-Scale Landowners in the Rural/Urban Interface of Lincoln County, Oklahoma, Who Use the Cooperative Extension Service*

Of the responses generated in this survey, 32.7% (n=98) answered that they did use the Cooperative Extension Service, 66.7% (n=200) answered that they did not use the Cooperative Extension Service, and 0.7% (n=2) failed to answer.

Of those respondents who did use the Cooperative Extension Service, 85.7% (n=256) also provided a response of how they used the Cooperative Extension Service (Table 1). The primary usage was for information purposes about soil conservation, types of vegetation to plant, water testing, supplies for livestock, and breeds of livestock that are suitable to Oklahoma.

Table 1

*Cooperative Extension Service Uses*

| Use | n | % |
|---|---|---|
| Information | 33 | 39.3 |
| Crop problems /needs | 14 | 16.7 |
| Gardening/Canning | 7 | 8.3 |
| Livestock information | 7 | 8.3 |
| Other | 7 | 8.3 |
| Soil issues | 6 | 7.1 |
| Workshops/Classes | 4 | 4.8 |
| Land Improvement | 3 | 3.6 |
| Water issues | 3 | 3.6 |

*Important Information Sources and Media Formats for Limited-Scale Landowners in the Urban/Rural Interface in Lincoln County, Oklahoma*

*Information Sources.*

For the Cooperative Extension Service to better serve its audience, it needs to know the information sources its audience is already using. Of those respondents who completed the survey, they were asked where they received their agricultural information. They were allowed to respond with more than one source. From this question, the survey generated 437 responses. The primary response was the Cooperative Extension Service with 108 responses, followed by the Internet with 59; other responses were generated such as: magazines (11.5%), other people (11.5%), the local co-op (11.1%), Oklahoma State University (6.1%), agricultural organizations (5.8%), the local agriculture teacher (5.6%), the feed store (4.6%), the coffee shop (4.0%), the library (0.6%), reading (1.5%), the courthouse (0.8%), T.V. (0.6%), trial and error (0.4%), mail (0.2%), the newspaper (0.2%), the radio (0.2%), and fairs (0.2%) (Table 2).

Table 2

*Information Sources*

| Source | n | % |
|---|---|---|
| Extension Service | 108 | 22.5 |
| Internet | 59 | 12.4 |
| Magazines | 55 | 11.5 |
| Person to Person | 55 | 11.5 |
| Local Coop | 53 | 11.1 |
| Oklahoma State University | 29 | 6.1 |
| Agriculture Organizations | 28 | 5.8 |
| Agricultural Teacher | 27 | 5.6 |
| Feed store | 22 | 4.6 |
| Coffee shop | 19 | 4.0 |
| Reading | 7 | 1.5 |
| Courthouse | 4 | 0.8 |
| T.V. | 3 | 0.6 |
| Library | 3 | 0.6 |
| Trial & Error | 2 | 0.4 |
| Direct Mail | 1 | 0.2 |
| Newspaper | 1 | 0.2 |
| Veterinarian | 1 | 0.2 |
| Radio | 1 | 0.2 |
| Fairs | 1 | 0.2 |

*Preferred Media Format.*

The respondents were given the option in the survey to select their preferred method of receiving information from the following: Internet, direct mail, magazines, technical publications, newspaper, television, radio, workshops, and other. The respondents were allowed to select as many methods as they used. A majority of the respondents preferred direct mail (53.0%), and the least preferred methods were workshops and the radio, both with 3.0% (Table 3).

*Findings Related to Technological Capabilities*

The third research question addresses the technological capabilities of limited-scale landowners in Lincoln County, Oklahoma. To answer this question, this paper focused on

Table 3

*Preferred Media Format*

| Format | n | % |
|---|---|---|
| Direct Mail | 159 | 53.0 |
| Magazines | 70 | 23.3 |
| Television | 59 | 19.7 |
| Internet | 53 | 17.7 |
| Other | 28 | 9.3 |
| Newspaper | 27 | 9.0 |
| Technical Publications | 17 | 5.7 |
| Radio | 9 | 3.0 |
| Workshops | 9 | 3.0 |

identifying the best methods of sharing information with a targeted audience. To accomplish this, the type of technological advances present in the population's home is needed.

*Owning a computer.*

In this survey, respondents were asked if they owned a computer. In this study, 71.0 % answered that they owned a computer and 29.0% answered that they did not own a computer. Of those who answered positively to owning a computer, 57.4% reported the computer was more than two years old (Table 4). This study also found that out of those respondents who owned computers, 82.6% had Internet access, and 17.4% did not have Internet access.

Table 4

*Computer Age*

| Age in Years | n | % |
|---|---|---|
| <1 | 20 | 9.3 |
| 1 | 20 | 9.3 |
| 1 - 2 | 50 | 23.5 |
| 2 - 3 | 44 | 20.7 |
| > 3 | 78 | 36.7 |
| Did not respond | 1 | 0.5 |

*Hours spent on the computer.*

Of the 300 respondents surveyed, 197 reported the amount of time they spent on the

computer each day. The responses ranged from zero time spent on the computer each day to 16 hours spent on the computer each day. Of those who spent time on the computer, a majority (76.1%) used the computer three hours or less each day (Table 5).

Table 5

*Time on computer*

| Hours | n | % |
|---|---|---|
| 0 | 3 | 1.5 |
| <1 | 18 | 9.1 |
| 1 | 62 | 31.5 |
| 2 | 42 | 21.3 |
| 3 | 28 | 14.2 |
| 4 | 18 | 9.1 |
| 5 | 10 | 5.1 |
| 6 | 8 | 4.1 |
| 7 | 2 | 3.5 |
| 8 | 4 | 2.0 |
| 10 | 1 | 0.5 |
| 16 | 1 | 0.5 |

*Owning a VCR or DVD player.*

When the respondents were asked if they owned a VCR, 284 (94.7%) answered yes and 16 (5.3%) answered no. When respondents were asked about owning a DVD player, 95 (31.7%) respondents answered "yes," 204 (68.0%) answered "no," and one (0.3%) failed to respond.

*Findings Related to Demographic Variables*

The final research objective of this study addresses the demographic variables with regard to preferred information dissemination methods of limited-scale landowners in Lincoln County, Oklahoma. To answer this question, a cross-tabulation was conducted between the age of the respondents and their education level in comparison to their preferred method for information dissemination.

*Age.*

The respondents' ages were grouped into four categories; 30 years old or younger, between the ages of 31 and 50, between the ages of 51-70, and over the age of 70. These age groups were then cross-referenced with the different information sources. Those respondents 30 years old or younger preferred direct mail, as did respondents aged 31-50 and 51-70, where respondents over the age of 70 equally preferred direct mail and television (Table 6). The second preferred media format for all respondents under the age of 70 was magazines. Respondents over 70 preferred television.

Table 6

*Preferred Media Format Based on Age*

| Age | 30 or less(n) | 31-50(n) | 51-70(n) | Over 70(n) |
|---|---|---|---|---|
| Direct Mail | 7 | 61 | 79 | 12 |
| Television | 2 | 13 | 32 | 12 |
| Magazines | 3 | 25 | 36 | 6 |
| Internet | 3 | 21 | 23 | 6 |
| Newspaper | 1 | 7 | 16 | 3 |
| Technical Publications | 1 | 8 | 7 | 1 |
| Radio | 0 | 1 | 7 | 1 |
| Workshops | 0 | 3 | 5 | 1 |
| Other | 0 | 7 | 17 | 4 |

*Education Level.*

The respondents' educational level was grouped into four categories; did not graduate, high school diploma, technical school or some college, and degreed. These education levels were then cross-referenced with the different information sources. All respondents in all four education level categories preferred direct mail (Table 7). The second preferred media format by education level varied among television, magazines, and the Internet.

## Conclusions

The findings of this study indicate that the audience prefers the use of direct mail as the

Table 7

*Preferred Media Format Based on Education Level*

| Ed. Level | No Diploma(n) | Diploma(n) | Tech/College(n) | Degree(n) |
|---|---|---|---|---|
| Direct Mail | 16 | 65 | 58 | 20 |
| Television | 11 | 22 | 21 | 5 |
| Magazines | 6 | 22 | 27 | 15 |
| Internet | 3 | 11 | 26 | 13 |
| Newspaper | 3 | 9 | 10 | 5 |
| Technical Pub. | 0 | 3 | 9 | 5 |
| Radio | 0 | 3 | 4 | 2 |
| Workshops | 0 | 3 | 4 | 2 |
| Other | 2 | 8 | 11 | 7 |

primary method of information dissemination. In addition, audience members also indicated that television, magazines, videos that can be seen on a VCR, and the use of the Internet are the secondary preferred media formats for information dissemination. The study showed a majority of the audience owned a computer and did have access to the Internet. Of those who did own a computer, the majority indicated that their computer was more than two years old. While almost all audience members owned a VCR, very few owned a DVD player; thus limiting their technological capabilities further.

The findings also showed that more than half of the audience did not use the Cooperative Extension Service. However, the findings did indicate that the audience most often sought agricultural information from the Extension or the Internet. The audience members indicated that even with technological advancements in place, like computers and VCRs, the preferred method of information dissemination remained direct mail.

In cross-tabulation, the study further indicated that the majority of respondents aged 30 years or less, aged 31-50, and aged 51-70 preferred direct mail, while those over the age of 70 equally preferred direct mail and television as their preferred method of information dissemination. This finding is in agreement with the general findings of the study. The general

findings of the study are further reaffirmed with respondents having all levels of education choosing direct mail as well. The cross-tabulation of age and education level indicates no differences than those found in the findings of the general study. Therefore, while age and educational levels of respondents may differ, their preferred method of information dissemination remains the same.

## Recommendations

With technological advances in the 21st century changing on a daily basis, it is crucial for the dissemination of information to be purposeful and targeted. The Cooperative Extension Service strives to meet this need for relaying information to their intended audience by determining their audiences' preferred method of informational delivery. The challenge lies in not necessarily using the latest or trendiest of technological advancements to deliver the message, but rather in determining the most effective method of reaching a particular audience.

Demographic factors may or may not play a role in informational delivery and should be examined further to determine how they relate to a particular audience with specific demographics as well as specific technological capabilities. In addition, a separate study should be conducted to determine why specific technological capabilities are used while others are not. Findings from such a study may indicate if Extension should be providing training to its audience with regard to technological capabilities.

This study used the urban/rural interface population of Lincoln County, Oklahoma, as a basis for study because of the trend of migration toward rural areas by city dwellers. A study should be conducted on a larger scale to determine if the results are similar and to generalize the findings beyond the scope of this sample population so that Extension can better meet its audiences' needs nationwide.

References

Astroth, K. A. (1990). Information Technology: Extension's Future. *Journal of Extension.* [Online]. 28(1). Available at: http://www.joe.org/joe/1990spring/f1.html.

Boldt, W. G. (1987). Targeting Audiences and Using Creative Media Approaches. *Journal of Extension.* [On-line]. 25(1). Available at: http://www.joe.org/joe/1987spring/rb2.html.

Buford, J.A. (1990). Extension Management in the Information Age. *Journal of Extension* [Online]. 28(1). Available at : http://www.joe.org/joe/1990spring/fut2.html.

Creighton, J.H., Baumgartner, D. M., & Gribbs, S. D. (2002). Fire Prevention in the Urban/Rural Interface: Washington's Backyard Forest Stewardship/Wildlife Safety Program. *Journal of Extension.* [On-line]. 40(2). Available at: http://www.joe.org/joe/2002april/entiw. html.

Development Alliance. (2002). *Development Alliance Community Demographics – State Data of Oklahoma.* Retrieved July 11, 2003 from: http://www.developmentalliance.com/demog/GetDAstate1.cfm?=OK.

Dillman, D. A. (1991). Agricultural Gatekeepers – Real Barrier to Rural Development. *Journal of Extension.* Vol. 29 No. 1.

Ekanem, E., Singh, S. P., Tegegne, F., & Akuley-Amenyenu, A. (2001). Differences in District Extension Leaders' Perceptions of the Problems and Needs of Tennessee Small Farmers. *Journal of Extension.* [On-line]. 39(4). Available at: http://www.joe.org/joe/2001august/rb4.html.

Hatch Act. (1887). *Hatch Act of 1887.* Retrieved April 9, 2003 from: http://www.reeusda.gov/1700/legis/hatch.htm.

Homestead Act (1862). Retrieved April 1, 2003 from: http://www.geocities.com/Heartland/Bluffs/3010/homestd.htm.

Homestead National Monument of America. (n.d.) *The Homestead Act.* Retrieved May 1, 2003 from: http://www.nps.gov/home/homestead_act.html.

Iddings, R. K., & Apps, J. W. (1992). Learning Preferences and Farm Computer Use. *Journal of Extension.* [On-line]. 30(3). Available at: http://www.joe.org/joe/1992fall/a4.html.

Krejcie, R. V., & Morgan, D. E. (1970). Determining Sample Size for Research Activities. *Educational And Psychological Measurement. 30.* 607-610.

Morrill Act. (1862). Retrieved March 31, 2003 from: http://www.ans.iastate.edu/archives/morrill1862.html.

Morrill Act. (1890). Retrieved April 1, 2003 from: http://www.ifas.ufl.edu/ls_grant/morrill2.htm.

Orr, C.L. (2003). Informational Needs of Limited-Scale Landowners within the Urban/Rural Interface of Lincoln County, Oklahoma (Master's thesis, Oklahoma State University, 2003).

Phipps, M. S., Murphy, B., Maddox, S., & Neas, K. (2001). Agriculture Information Preference Study. Available at: http://www.ncagr.com/research.

Polson, J., & Gastier, T. (2001). Small Farm/New Farm: One Agent Meeting Other Agents' Needs for Research-Based Information Through the WWW. *Journal of Extension.* [Online]. 39(4). Available at: http://www.joe.org/joe/2001august/tt1.html.

Populations Statistics. (2003). *United States of America – Oklahoma :urban population.* Retrieved July 11, 2003 from: http://www.library.uu.nl.wesp/populstat/Americas/usas oky.htm.

Pounds, D. (1985). Putting Extension Information Where People Will Find It. *Journal of Extension.* [On-line]. 23(4). Available at: http://www.joe.org/joe/1985winter/a6.html.

Richardson, J. G. (1995). *An Assessment of Clientele Preferences for Receiving Extension Information.* Raleigh, N.C.: North Carolina State University. (ERIC Document Reproduction Service No. ED356358)

Sharp, J., Imerman, E., & Peters, G. (2002). Community Supported Agriculture (CSA): Building Community Among Farmers and Non-Farmers. *Journal of Extension.* [On-line]. 40(3). Available at: http://www.joe.org/joe/2002june/a3.html.

Smith-Lever Act. (1914). Retrieved April 1, 2003 from: http://www.highered. org/resources/smith.htm.

St. Clair, C. (2001). *The History and Philosophy of Extension.* University of Missouri Outreach & Extension. IMPACT: A Council Development Project, Leaflet No. 9. Retrieved April 10, 2003 from: http://www.outreach.missouri.edu/extcouncil/Impacts/9.htm.

# Master's Level Agricultural Communications Curriculum: A National Delphi Study

Leslie A. Simon
Graduate Student, Texas Tech University

Dr. Jacqui D. Haygood
English Teacher, Canadian Independent School District

Dr. Cindy L. Akers
Assistant Professor, Texas Tech University
Cindy.akers@ttu.edu

Dr. David L. Doerfert
Associate Professor, Texas Tech University
David.doerfert@ttu.edu

Dr. Chad S. Davis
Assistant Professor, Texas Tech University
Chad.S.Davis@ttu.edu

Susie J. R. Bullock
Instructor, Texas Tech University
Susie.bullock@ttu.edu

# Master's Level Agricultural Communications Curriculum: A National Delphi Study


## Abstract

The major purpose of this study was to identify what topics and curricular areas a master's level agricultural communications curriculum should include. Identification of the topic and curricular areas came from industry representatives and university faculty.

A three-round Delphi technique was the principle procedure used to conduct the study with a total of 30 individuals participating in round one. In the first round, the panel identified 23 topics that should be included in a master's level agricultural communications curriculum: (1) Advertising, (2) Electives Pertaining to Major, (3) Emerging Issues and Trends in Agriculture, (4) Emerging Technology, (5) Graphic Design, (6) History and Philosophy, (7) Internship, (8) Legislative Issues, (9) Management, (10) Marketing, (11) Mass Communications, (12) Photography, (13) Professional Seminars, (14) Public Relations, (15) Publications, (16) Research, (17) Risk Communications, (18) Speech Communication, (19) Overview Courses, (20) Thesis, (21) Video and Broadcast, (22) Web Classes, and (23) Writing.

Resulting rounds produced 90 curricular areas within the 23 topic areas that were identified as potential material in a master's curriculum.



**Keywords:** Delphi, Curriculum, Master's Program, and Agricultural Communications

## Introduction

Master's graduates have emerged from programs as more enlightened critical thinkers equipped with enhanced communication and teamwork skills (The Changing Landscape, 2001). Some people in the past have concluded that master's programs are the forgotten middle child of higher academia. "Despite being relegated by some of the educators… (it is)… concluded that master's education in the United States has been a silent success – for degree holders, employers, and society in general" (Conrad, Haworth, & Millar, 1993, p. 315).

A master's level education offers a combination of research and coursework at a higher level than a bachelor's degree. It offers more in-depth knowledge of training, with increased specialization and intensity of instruction. Students at this level become more self-directed and more successful in the branch of knowledge which they wish to learn (www.y-axis.com, 2003). However, not all universities offer all programs at the master's level.

The overwhelming lack of knowledge about agriculture on the part of the general public blended with the development of a business oriented industry in agriculture has produced a great interest and need for universities to include agricultural communications curriculum in the traditional agricultural education programs (Birkenholz & Craven, 1996). Universities offering agricultural programs have long had the traditional classes which offer skills needed in order to sustain land, teach agriculture, and preserve wildlife. However, with the growing technology of our times, communications is a very important skill for new graduates to possess (Bailey-Evans, 1994).

Technology exists all around us, leaving us almost helpless in today's society without it. New communication media have even changed the thoughts and ideas of people pertaining to agricultural fields. Satellite transmissions, video conferencing, the World Wide Web,

videography, digital photography as well as many more, either not mentioned or still in development, are used in the most basic agricultural professions or tasks, most dating back from a century ago. Are university students at the master's level learning all that they can to put them ahead when the time comes for their professional careers? (Bailey-Evans, 1994)

"The aggressive changes in technology indicate a pressing need to examine the curriculum in an effort to make it applicable to students and their future employers" (Bailey-Evans, 1994, p. 1). Technology, changing every day, is harder than ever to keep up with; however, it is the responsibility of higher education to observe and keep pace with the ever-changing technological advances for the preparation and learned skills to produce high quality graduates. This is not a task that can be completed only by observing the processes and methods of the current agricultural communications students, but is a process that will have to refer to those who have already completed and are using this level of coursework. Agricultural communications programs should frequently review the status of their graduates in order to more effectively determine the merit within the existing curriculum (Akers, 2000).

Many studies have shown that there is not one perfect group to survey for this problem. The curriculum revision process should be a collaborative effort between students directly involved with the studies in question, teachers who both teach the skills and administer the curriculum standards, and professionals who use these certain skills (Wrye, 1992).

Therefore, an in-depth assessment of the present curricular offerings is a necessary base for an effective curriculum revision (Larson & Hoilberg, 1987; Sledge et al., 1987; Kroupa & Evans, 1976). If universities are going to provide a degree program to students, faculty members must assess and provide for the needs of every student through the agricultural communications

curriculum and equip them with the knowledge needed to sustain employment upon completion of the requirements of a master's degree.

## Purpose and Research Questions

The purpose of this study was to identify the areas of study that should be included in an agricultural communications master's degree program. The study also determined how each identified area of study should be structured instructionally. This information was collected through the input of professionals in the agricultural communications field as well as university faculty. In order to develop the most thorough curriculum, the following questions were developed: (1) Upon completion of the agricultural communications master's program, what skills or competencies should students have to succeed in their chosen agricultural communications field as perceived by industry professionals and agricultural communications professors? (2) What specific courses or topics should be included in an agricultural communications curriculum?

## Methodology

To conduct this study, the Delphi technique was used to get the most comprehensive results. This method is used in order to develop a consensus within a group of people on a particular issue without bringing the subjects in personal contact with each other (Akers, 2000). Linstone and Turnoff (1975) stated "the Delphi technique may be characterized as a method for structuring a group so that the process is effective in allowing a group of individualists as a whole, to deal with complex problems" (p. 13).

The panel of experts used in this survey consisted of people that are in some way affiliated with the teaching or profession of agricultural communications. The industry professionals used were executive officers of six agricultural communications-related

professional organizations. The six organizations were: (1) Agricultural Communicators of Tomorrow (ACT), (2) Agricultural Communicators in Education (ACE), (3) American Agricultural Editors' Association (AAEA), (4) Cooperative Communicators Association (CCA), (5) Livestock Publication Council (LPC), and (6) National Association of Farm Broadcasters (NAFB).

The second subgroup consisted of faculty members from major universities across the United States who currently teach agricultural communications either at the undergraduate and/or graduate level. The individuals who were selected and agreed to participate in the study included faculty members from (1) Texas Tech University, (2) Oklahoma State University, (3) Texas A&M University, (4) University of Arizona, (5) Clemson University, (6) University of Arkansas, (7) California Poly University at San Luis Obispo, (8) University of Florida, and (9) Kansas State University.

Each panel member was contacted with an explanation of the purpose of the study. The panel members were given the opportunity to refuse participation. The panel members were given a choice on the delivery method they would like to receive the surveys. All panel members chose electronic email. The two subgroups consisted of 30 people total at the beginning of the study, 15 professionals and 15 faculty members.

From the reviewed literature, an open-ended questionnaire consisting of one question was developed for Round One. The question was validated by a panel of faculty and industry professionals not included in the panel of experts. The instrument was pilot tested using individuals that are part of the target population, but not part of the sample population.

The study participants were asked to list several answers to the question. Frequencies, percentages, and rankings were used to summarize the responses to this round. Three

independent readers completed this technique on the first round responses. The three readers then collapsed similar responses. One hundred percent response was received in this round.

In Round Two, the panel of experts was presented with a Web-based instrument which asked them to do three things: (1) rate the 25 main areas of study that emerged from Round One in terms of appropriateness for a master's in agricultural communications curriculum, and (2) rate the 131 curricular areas that emerged from Round One in terms of appropriateness for a master's in agricultural communications curriculum. The panel was asked to rate each curricular area using a four–point Likert-type scale with 1 = "Strongly Disagree," 2 = "Disagree," 3 = "Agree," and 4 = "Strongly Agree." The scale was used to determine each panel member's level of agreement as to the inclusion of the curricular area or topic in a master's program in agricultural communications. The researchers determined *a priori* those areas receiving 80% level of agreement or higher would be used in a master's program in agricultural communications. In addition to evaluating the 131 curricular areas and 25 main areas the panel members were asked to list additional areas missed in Round One.

The researchers utilized Dillman's Tailored Design Method (2000) to solicit response. Twenty-eight of the panel members responded for a 93% response rate. Two of the industry representatives contacted the researcher and removed themselves from the panel. Frequencies, percentages, and ranks were used to evaluate the second round responses.

Round Three served as the final round for the study. There were no items added on the other section in Round Two, so only the 31 curricular areas that did not receive the 80% level of agreement in round two remained in round three. The 28 remaining panel members responded to round three for a 93% response rate. Frequencies, percentages, and rankings were used to evaluate the third round responses.

## Findings

The open-ended question regarding what content should be included in the ideal master's level agricultural communications curriculum produced 121curricular areas one or more of the panelists agreed should be included at the master's level. Of these areas the researchers found the following 25 main areas of study: (1) Advertising, (2) Education/Teaching, (3) Electives Pertaining to Major, (4) Emerging Issues and Trends in Agriculture, (5) Emerging Technology, (6) Graphic Design, (7) History and Philosophy, (8) Internship, (9) Legislative Issues, (10) Leveling Courses, (11) Management, (12) Marketing, (13) Mass Communications, (14) Photography, (15) Professional Seminars, (16) Public Relations, (17) Publications, (18) Research, (19) Risk Communications, (20) Speech Communication, (21) Overview Courses, (22) Thesis, (23) Video and Broadcast, (24) Web Classes, and (25) Writing.

Twenty-three of the 25 topic areas and 76 of the 121 curricular areas were identified by the panel of experts as necessary in a master's of agricultural communications program. Those topics and curricular areas that met the 80% level of agreement in round two are listed in Table 1.

Table 1
*Topic areas and curricular areas that met the 80% level of agreement in round two.*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Advertising** | | **85.8** |
| | Advertising | 85.7 |
| **Electives Regarding Major** | | **100.0** |
| **Emerging Issues and Trends in Agriculture** | | **95.7** |
| | Biotechnology Issues | 92.6 |
| | Environmental Issues | 92.6 |
| | Health & Food Safety Issues | 92.5 |
| | Rural Issues | 88.9 |
| **Emerging Technology** | | **95.6** |
| | Technologies of Change | 89.3 |

Table 1 *continued.*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Graphic Design** | | **96.1** |
| | Elements of Design | 100.0 |
| | Applications (Photoshop, Illustrator, Advanced Design, Desktop Publishing, Quark, PageMaker) | 85.2 |
| **History/Philosophy** | | **91.3** |
| | Communications Role in Agriculture | 96.4 |
| | Agricultural Communications Philosophy | 85.8 |
| | Agricultural Communications History | 85.7 |
| | Agriculture and the Public | 82.2 |
| **Internships** | | **82.2** |
| **Legislative Issues** | | **93.1** |
| | Communications Related | 96.4 |
| | Agriculturally Related | 85.7 |
| **Management** | | **91.7** |
| | Project Management | 100.0 |
| | Media Management | 100.0 |
| | Information Management and Evaluation | 100.0 |
| | Crisis Management | 100.0 |
| | Basic Management | 95.7 |
| | Budgeting in Communications | 92.9 |
| | Fiscal | 92.6 |
| | Issues in Management | 85.7 |
| | Personnel Management | 83.3 |
| | Managing/Understanding Non-Profit, Commodity and Trade Associations | 82.2 |
| | Development Strategies | 82.1 |

Table 1 *continued*

| Topic Area | Curricular Area | Round 2<br>% of Agreement* |
|---|---|---|
| **Marketing** | | **95.8** |
| | Marketing | 100.0 |
| | Social Marketing | 85.7 |
| **Mass Communications** | | **100.0** |
| | Communications Law | 100.0 |
| | Effective Communications Skills | 92.3 |
| | Current Issues | 92.3 |
| | Public Opinions | 88.4 |
| | International Relations/Experience | 80.7 |
| **Photography** | | **83.4** |
| **Professional Seminars** | | **96.2** |
| **Public Relations** | | **100.0** |
| | Strategic Communications Planning | 100.0 |
| | Advanced Media Campaign | 96.2 |
| | Media Relations | 96.0 |
| | Public Relations | 96.0 |
| | Qualifying/Quantifying Public Relations and Advertising Departments | 88.5 |
| | Psychology of Public Relations | 88.4 |
| | Campaign Strategies | 84.0 |
| **Publications** | | **92.0** |
| | Audience Analysis | 88.5 |
| | Advanced Publications | 92.3 |
| **Research** | | **92.0** |
| | Analyzing Statistical Data | 96.2 |
| | Media Analysis | 92.3 |
| | Research Methods (Qualitative and Quantitative) | 92.3 |

Table1. *continued*

| Topic Area | Curricular Area | Round 2<br>% of Agreement* |
|---|---|---|
| | Consumer Attitude Research | 88.5 |
| | Evaluation of Communications Programs | 88.5 |
| | Agricultural Communications Research | 88.4 |
| | Statistics | 84.7 |
| | Communications Based Statistics | 84.6 |
| **Risk Communications** | | **92.0** |
| | Risk Communications | 92.3 |
| | Creating a Crisis Communication Plan | 84.7 |
| **Speech Communications** | | **80.0** |
| | Effective Presentations | 88.5 |
| **Overview** | | **91.3** |
| | Case Studies in Communications | 96.2 |
| | Ethics | 96.1 |
| | New Media Theory and Applications | 84.6 |
| | Logic | 84.5 |
| | Communications Theory | 80.8 |
| | Changing Roles of Communications Due to Different Media | 80.8 |
| | Diffusion and Innovations of New Technology | 80.8 |
| | Multiculturalism | 80.7 |
| **Thesis** | | **88.5** |
| **Video/Broadcast** | | **91.7** |
| | Video Production | 92.0 |
| | Digital Editing | 92.0 |
| | Writing for Broadcast | 88.0 |

Table 1 *continued*

| Topic Area | Curricular Area | Round 2 % of Agreement* |
|---|---|---|
| **Web Classes** | | **92.0** |
| | Web Management | 96.1 |
| | The Internets Role in Communications | 96.0 |
| | Applications for the Web | 84.6 |
| **Writing** | | **100.0** |
| | Technical Writing | 96.2 |
| | Advanced Writing | 96.1 |
| | Advanced Reporting | 92.3 |
| | Editing | 92.3 |
| | Technologies Application to Journalism | 84.7 |
| | Print Media | 84.6 |
| | Reporting | 84.6 |
| | Writing for all Audiences | 84.6 |
| | Journalism | 80.0 |

*The percentage of individuals who responded with either 3 (Agree) or 4 (Strongly Agree) combined.

Thirty-one items did not reach the 80% level of agreement in round two. Upon second review the panel of experts identified 14 of curricular areas and 1 topic areas as necessary in a master's of agricultural communications curriculum. The 34 items and their level of agreement in Rounds 2 and 3 are listed in Table 2.

Table 2
*Topics and curricular areas that did not meet the 80% agreement and went to round three*

| Topic Area | Curricular Area | Round 2 % of Agreement | Round 3 % of Agreement |
|---|---|---|---|
| **Advertising** | Public Management of Advertising | 75.0 | 78.5 |
| **Education and Teaching** | | **73.1** | **66.7** |
| | Teaching Methods | 71.4 | 60.8 |
| | Distance Education | 59.2 | 60.7 |
| | Student Teaching | 25.0 | 25.0 |
| **Emerging Technology** | GPS in Agricultural Communications | 50.0 | 60.7 |
| **History/Philosophy** | History of Land Grant Universities | 62.9 | 64.3 |
| **Legislative Issues** | Overview Courses | 75.0 | 89.3* |
| **Leveling Courses** | | **76.2** | **73.1** |
| **Management** | Personal Development Management | 75.0 | 65.4 |
| | Financial Analysis | 75.0 | 75.0 |
| | Association Management | 75.0 | 78.6 |
| **Marketing** | Sales | 75.0 | 78.6 |
| | Promotion of Educational Institutions and Programs | 67.8 | 71.4 |
| **Mass Communications** | Mass Media Class | 73.1 | 85.1* |
| **Overview** | Effective Communications Processes | 76.9 | 96.4* |
| | Creativity Training | 76.9 | 89.3* |
| | Leadership | 76.9 | 70.3 |
| | Impact our ability to transmit information worldwide had on communications | 73.1 | 75.0 |

Table 2 *continued*

| Topic Area | Curricular Area | Round 2 % of Agreement | Round 3 % of Agreement |
|---|---|---|---|
| **Photography** | Digital Photography's Role in Communications | 77.0 | 92.8* |
| | Photography | 76.9 | 92.9* |
| **Publications** | Commercial Printing | 76.9 | 73.0 |
| **Research** | Research and Academics | 73.1 | 75.0 |
| **Speech Communications** | Oral Communications | 73.1 | 82.1* |
| | Audiovisual Material | 72.0 | 82.1* |
| | Non-Verbal Communications | 69.3 | 82.1* |
| **Video Broadcast** | Role of Broadcasting | 76.0 | 92.9* |
| | Role of Television | 73.0 | 89.3* |
| | Radio Production | 72.0 | 67.8 |
| | Video's Role in communications | 69.2 | 85.7* |
| **Web Classes** | Writing for emerging media | 77.0 | 96.3* |
| **Writing** | Writing and developing grants | 76.9 | 82.1* |
| | Scholarly Writing | 73.1 | 77.7 |

*The percentage of individuals who responded with either 3 (Agree) or 4 (Strongly Agree) Combined.

## Conclusions and Recommendations

Topic areas that have been included are only those with 80% agreement from the panel members. The following topic areas should be used when designing an agricultural communications curriculum. Of these areas the researchers found the following 23 main areas of study: (1) Advertising, (2) Electives Pertaining to Major, (3) Emerging Issues and Trends in Agriculture, (4) Emerging Technology, (5) Graphic Design, (6) History and Philosophy, (7)

Internship, (8) Legislative Issues, (9) Management, (10) Marketing, (11) Mass Communications, (12) Photography, (13) Professional Seminars, (14) Public Relations, (15) Publications, (16) Research, (17) Risk Communications, (18) Speech Communication, (19) Overview Courses, (20) Thesis, (21) Video and Broadcast, (22) Web Classes, and (23) Writing.

Ninety curricular areas were identified as necessary components of a master's of agricultural communications program. Those areas are found in Tables 1 and 2.

The following recommendations were made based on the findings and conclusions of this study.

- Additional studies should be conducted to further review the competencies and to determine if any further changes are needed in the curriculum.
- A feasibility study should be conducted to determine what a university needs, including, but not limited to, faculty and yearly resources, to deliver a master's program effectively and efficiently.
- A study should be conducted to measure the level of agreement of the various segments of the panel such as faculty compared to the industry leaders to understand if the perceived needs of each group correlate with the other segments of panel members.
- A market analysis should be conducted to understand the need of the program, delivery strategy and value to the individuals and organizations related to agricultural communications.
- Other stakeholders of agricultural communications should be surveyed. According to Tyler (1969) this includes future, present, and past students, faculty and staff of universities, community members, and administrative officials.

- A study should be conducted to determine the social and cultural benefits as well as the emotional intelligence benefits of an advanced degree.
- Curriculum at any level should be reviewed and revised every year to keep up with current changes of technology.
- The concept of curriculum centers should be explored. The center could focus on news reporting, feature reporting, and news management and include intensive training in reporting, writing and editing, while developing speed, clarity and accuracy.
- Based on this study, the researchers suggests that the following courses could be taught in an agricultural communications master's curriculum:
    - Advanced Methods in Agricultural Communications (3)–Students will learn about the latest research and principles in agricultural communications covering aspects of advertising, communications law, effective communications skills, current issues and trends in communications, consumer research, mass media technologies, and international relations.
    - Advanced Writing Techniques (3)–Students will work on the development of their own authentic writing voices focusing on the skills behind powerful reporting and writing and effective editing. Practical approaches and successful methods used by communicators and journalists will be the basis for the course with special emphasis on voice, storytelling, deadline writing, ethical decision-making, and covering diverse communities.
    - Contemporary Issues in Agricultural Communications (3)–Students will learn and discuss the agriculture and communication industry trends and issues that are having an impact on the agricultural communications profession.

- Data Analysis (3)–This course will focus on the proper use of common quantitative and qualitative data analysis techniques and the interpretation of the research results.
- Electives Regarding Major (0-3)–Students may complete up to three hours in any college on topics relating to their specialization in agricultural communications.
- Electronic Information Dissemination (3)–Students will learn about emerging technology and technologies of change. They will also learn about Web design theory and application including Web management, the Internet's role in communications, audiovisual materials, writing for emerging media, and applications for the Web.
- History, Philosophy and Policy of Agricultural Communications (3)–This course includes an overview of the theory of communications, the role of agricultural communications in the agriculture industry, agricultural communication history and philosophy, agriculture and the public and legislative issues dealing with communications and agriculture.
- Internship/Practicum (3)–Students are offered the opportunity to become highly proficient in areas of sub-specialization within the agricultural communications profession. Students will be expected to complete a final project and presentation as well as attend 12 hours of professional seminars.
- Marketing and Public Relations (3)–Course includes the theory and applications used in marketing and public relations efforts including social marketing, media relations, qualifying/quantifying public relations and advertising departments, psychology of public relations, and campaign strategies.

- Print Based Media Production (3)–Students will determine what the world of magazine readers needs, and they will deliver it. Students will assume staff positions – research, advertising, circulation, design, publishing, online, technology, promotions and, of course, editorial – and build the publication from the ground up. The result is not just a prototype but also a whole entrepreneurial package, including budget and circulation projections, an advertising campaign and a five-year business plan.
- Project and Media Management (3)–Dramatic changes in technology and the media's role in converging technologies requires new management and leadership techniques. Students will study the theory, tools and techniques being used to manage successfully in today's complex agricultural communications profession.
- Research Methods–Emphasis on understanding common quantitative and qualitative research methods and tools.
- Risk and Crisis Communications (3)–Students learn about the latest research and principles of crisis communications, risk communications, communications strategies, crisis management, and evaluating overall campaign effectiveness.
- Seminars (2)–Problems, issues and approaches to agricultural communications in selected topic areas. Specific content will vary but could include consumer attitude research and evaluation, writing and developing grants, managing and understanding non-profit organizations, and commodity and trade associations.
- Statistics (3)–Emphasis on analysis of research data utilizing descriptive and inferential statistical techniques.

- Thesis (6)–Hours to complete a thesis. If the non-thesis option is chosen, the student must substitute 6 hours to replace the thesis.
- Video Based Media Production (3) – Students will gain the practical, creative, and communication skills necessary for delivering messages and communication tasks with video in corporate, governmental, and organizational settings.

- Based on the previous courses, two 36-hour curricula should be used as a potential agricultural communications master's program. The two options are thesis and non-thesis (Table 3 and 4).

Table 3.
*Developed curriculum plans from results of study thesis option*

| **THESIS OPTION** | **HOURS** |
|---|---|
| **Agricultural Communications Core** | **11** |
| Research Methods | 3 |
| History, Philosophy & Policy of Agricultural Communications | 3 |
| Seminar (2 semesters) | 2 |
| Statistics | 3 |
| **Thesis** | **6** |
| | |
| **Agricultural Communications Courses** (Choose from the Following) | **16-19** |
| Advanced Methods in Agricultural Communications | 3 |
| Advanced Writing Techniques | 3 |
| Data Analysis | 3 |
| Contemporary Issues in Agricultural Communications | 3 |
| Electronic Information Dissemination | 3 |
| Marketing and Public Relations | 3 |
| Print Based Media Production | 3 |
| Project and Media Management | 3 |
| Risk and Crisis Communication | 3 |
| Video Based Media Production | 3 |
| **Electives** | **0-3** |
| | |
| **TOTAL HOURS** | **36** |

Table 4.
*Developed curriculum plans from results of study non-thesis option*

| NON-THESIS OPTION | HOURS |
|---|---|
| **Agricultural Communications Core** | **11** |
| Research Methods | 3 |
| History, Philosophy & Policy of Agricultural Communications | 3 |
| Seminar (2 semesters) | 2 |
| Statistics | 3 |
| **Practicum or Internship** | **3-6** |
| **Agricultural Communications Courses** (Choose from the Following) | **16-19** |
| Advanced Methods in Agricultural Communications | 3 |
| Advanced Writing Techniques | 3 |
| Data Analysis | 3 |
| Contemporary Issues in Agricultural Communications | 3 |
| Electronic Information Dissemination | 3 |
| Marketing and Public Relations | 3 |
| Print Based Media Production | 3 |
| Project and Media Management | 3 |
| Risk and Crisis Communication | 3 |
| Video Based Media Production | 3 |
| **Electives** | **0-6** |
| **TOTAL HOURS** | **36** |

## REFERENCES


Akers, C.W. (2000). *High school agricultural communications competencies: A national Delphi study.* Unpublished doctoral dissertation, Texas Tech University, Lubbock.

Bailey-Evans, F. (1994). *Enhancing the agricultural communications curriculum: A national Delphi study.* Unpublished master's thesis, Texas Tech University, Lubbock.

Birkenholz, R.J. & Craven, J. (1996). Agricultural communications – bridging the gap. *The Agricultural Education Magazine,* 68 (Suppl. 5), 10-11.

The changing landscape of master's education: implications for Penn State. (2001). Retrieved February 11, 2003, from http://www.gradsch.psu.edu/gradinit/pennstatetalk.pdf

Conrad, C., Haworth, J., Millar, S. (1993). *A silent success: Master's education in the United States.* Baltimore: The Johns Hopkins University Press.

Dillman, D.A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York, NY: Wiley & Sons.

Kroupa, E. & Evans, J. (1976). Characteristics and course recommendations of agricultural communicators: An update. *ACE Quarterly*, January-March 1976.

Larson, K.L, & Hoilberg, E.O. (1987). Current curricular designs: Strengths and weaknesses. E. Porath (Ed.), *Curricular Innovations for 2005: Planning for the Future of our Food and Agricultural Sciences.* Madison, WI: United States Department of Agriculture, North Central Region Curricular Committee.

Linstone, H.A., & Turoff, M. (1975). *The Delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.

Sledge, G.W., Darrow, E.E., Ellington, E.F., Erpelding, L.H., Hartung, T.E., & Riesch, K.W. (1987). Futuristic curricular models/designs for the food and agricultural sciences. In E. Porath (Ed.), *Curricular Innovations for 2005: Planning for the future of our food and agricultural sciences.* Madison, WI: United States Department of Agriculture, North Central Region Curricular Committee.

Wrye, C.L. (1992). *Occupational status and educational needs of the College of Agricultural Sciences graduates of Texas Tech University.* Unpublished master's thesis, Texas Tech University, Lubbock, TX.

http://www.y-axis.com/studyoverseas/usguide/gradedu.shtml

# Agricultural Scientists' Perceptions of Fairness and Accuracy of Science and Agriculture Coverage in the News Media

**Amanda Ruth**
Graduate Student
University of Florida
amruth@ufl.edu

**Ricky Telg**
Associate Professor
University of Florida
rtelg@mail.ifas.ufl.edu

**Tracy Irani**
Assistant Professor
University of Florida
irani@ufl.edu

**Deanna Locke**
Graduate Student
University of Florida
hogswild@aol.com

Department of Agricultural Education & Communication
P.O. Box 110540
University of Florida
Gainesville, FL 32611-0540
(352) 392-0502
FAX: (352) 392-9585

# Agricultural Scientists' Perceptions of Science and Agriculture Coverage in the News Media


## Abstract

This study examined Southern agricultural scientists' perceptions of the fairness and accuracy of news media reports on agricultural and scientific topics. A stratified random sample of 300 Southern Association of Agricultural Scientists was drawn from the association's online member directory. Sixty-two agricultural scientists responded to the online, Web-based survey, for a response rate of 20.6%. Agricultural scientists' responses tended to fall in the middle of the five-point Likert-type scale on most of the descriptor sets provided to them (fair/unfair, biased/unbiased, trustworthy/untrustworthy, accurate/inaccurate, and balanced/unbalanced). However, the tendency was to be more negative than positive. Respondents were more negative of national news coverage of general scientific topics and topics from their agricultural disciplines, but more positive about local news and agricultural news coverage of science and agricultural stories. Agricultural scientists were also more favorable in their perceptions of coverage of general science topics than of stories in their agricultural discipline.



**Key Words:** perceptions, accuracy, fair, balanced, reporting, agriculture, news media

# Agricultural Scientists' Perceptions of Fairness and Accuracy of Science and Agriculture Coverage in the News Media

## Introduction

The reality of science for most people is what they see or read through mass media channels (Nelkin, 1995). Good reporting allows people to evaluate science policy issues and make rational personal choices; poor reporting can mislead a public that is increasingly affected by science (Nelkin, 1995). The news media, therefore, play a critical role as one of the primary means through which scientific issues are brought to the attention of the general public (Malone, Boyd, & Bero, 2000).

Gascoigne and Metcalfe (1997) conducted a study of 178 Australian scientists who participated in media training workshops to find out the scientists' attitudes toward using the media as a mechanism of communicating their research. Scientists said the media are generally neutral or negative when delivering scientific information to the public. The study also indicated scientists, in general, essentially distrust the media and doubt the media's potential to help their field.

Nelkin (1995), who has conducted extensive research on scientist and media relations, wrote that scientists mistrust journalists and criticize the reporting about their fields. Scientists also believe that journalists care little about the truth; reporters, scientists say, are more interested in the story, rather than the facts. Nelkin also has found that scientists complain about inaccurate, sensational, and biased reporting. She indicated a fear among scientists that the media encourages anti-science attitudes.

Hartz and Chappell (1997) found that scientists who are inexperienced in media training are fearful of misrepresentation and inaccuracy. They see the media as exploitive, manipulative, and sensationalistic in their reporting of scientific findings.

Only 11% of the scientists surveyed expressed a great deal of confidence in the media, while 22% said they had hardly any confidence in the media. As for reporting science issues, 30% said national television does a poor job, yet about 50% said the information was fair. Nearly 33% of scientists said national newspapers did a better job of general coverage, and about 50% said the national newspapers did an excellent job of science and technology coverage.

Hartz and Chappell (1997) also surveyed journalists about their perceptions of scientists. Journalists complained about scientists – immersed in their own jargon – as being intellectual and failing to explain their work simply to reporters or the public. Reporters also said scientists needed to communicate the issue that is relevant to the public, because science research is often complex. The survey showed that the majority of journalists had a great deal of confidence in scientists. About 63% said they think scientists want the public to know about their work.

One subset of the scientific community is agricultural science. However, even though agriculture is important to America's economic, environmental, and cultural growth, agricultural news is surprisingly a neglected topic in the mass media (Stringer & Thomson, 1999). Given the importance of providing information to the public through the news media, the question of how scientists – in this case, agricultural scientists – perceive the coverage of scientific and agricultural topics in the news media need to be raised. Agricultural scientists' perceptions about story coverage may impact their willingness to work with the media to get information to the public. Therefore, the purpose of this study was to explore a group of agricultural scientists' perceptions of news media reports on agricultural and scientific news.

## Methodology

The target population for this study was agricultural scientists who are members of the Southern Association of Agricultural Scientists (SAAS). SAAS members are agricultural leaders in education and industry who promote the interests of Southern agriculture (Southern Association of Agricultural Scientists, 2002). SAAS is comprised of a diverse group of academics and professionals in the agricultural sector of 13 Southern states.

To conduct the study, a stratified random sample (n=300) of SAAS members was drawn from the association's online member directory. In order to stratify the sample, the entire SAAS membership directory was first grouped according to scientific discipline (agricultural communications, agricultural economics, agricultural education, agronomy, animal science, biochemistry, horticulture, plant pathology, rural sociology, and soil and water conservation). Only members with complete directory information (name, discipline, and e-mail address) were accessed. Every third member from each discipline was selected to randomize the sample.

The study utilized a 17-item, researcher-developed survey instrument that was descriptive in nature. The instrument included sections on scientists' perceptions of news media, their experiences with being interviewed by news media, their level of confidence/need for training in working with the media, and demographics. All items, with the exception of demographics, utilized five-point Likert-type scales for each response stem. The variables focused on for this study were the scientists' perceptions of stories covered by news media (all news media, national news media, local news media, agricultural news media) pertaining to agricultural and general scientific topics.

Participants provided responses about their perceptions, based on the degree of fairness, balance, trustworthiness, accuracy, and bias.

To assure face and content validity, a panel of experts, comprised of media relations experts reviewed the survey, and it was subsequently revised to reflect panel members' suggestions. The resulting instrument was then pilot-tested with a sub-sample (n=17) of SAAS members who were not included in the final study. The results of the pilot study were used to further refine the instrument for use in the actual study.

The survey was developed as an online, Web-based survey instrument, using form development and data collection procedures as outlined by Dillman (1999). To initiate the survey, respondents first received an email cover letter informing them about the Web-based survey and providing them with a respondent code to keep track of respondents and non-respondents. After the initial posting of the survey, respondents were given two weeks to return it. A follow-up reminder was then sent to nonrespondents. A third and final reminder was sent one month later. After data collection, survey response data was utilized to assess reliability of the instrument, resulting in a Chronbach's alpha for the overall scale of .86.

## Results

Of the 300 SAAS members surveyed, 62 responded, for a response rate of 20.6%, with 85% (n=53) male and 15% (n=9) female respondents. The majority of respondents had been employed in a university setting for several years; slightly more than half were at the associate professor (20%) or full professor (31%) levels. However, 28% said their job title fell in the "other" category, with most of these stating their titles were

"government scientist" and "Experiment Station director or superintendent." Table 1 shows the number and percentage of respondents by discipline.

Table 1

*Respondents According to Academic Discipline*

| Academic Discipline | *N* | Percent |
|---|---|---|
| Agricultural Communications | 0 | 0 |
| Agricultural Economics | 13 | 21 |
| Agricultural Education | 1 | 2 |
| Agronomy | 11 | 17 |
| Animal Science | 13 | 21 |
| Biochemistry | 1 | 2 |
| Horticulture | 12 | 19 |
| Plant Pathology | 3 | 5 |
| Rural Sociology | 1 | 2 |
| Soil & Water Conservation | 3 | 5 |
| Other | 4 | 6 |
| | 62 | 100 |

Respondents were asked to describe their perceptions of coverage of news reports focusing on their agricultural discipline and of scientific topics in general. Perceptions were assessed by utilizing five sets of bipolar descriptive adjectives, each on a one-to-five-point semantic differential scale. The sets of descriptors were "fair" (1) to "unfair" (5), "balanced" (1) to "unbalanced" (5), "trustworthy" (1) to "untrustworthy" (5), "accurate" (1) to "inaccurate" (5), and "biased" (1) to "unbiased" (5). The respondents also were asked to respond to news media coverage in four categories: <u>all</u> news media (encompassing national, local, and agricultural news), <u>national</u> news media, <u>local</u> news media, and <u>agricultural</u> news media. The term "news media" was defined in the survey as referring "to all of the communication channels through which news travels to the general public (television, newspapers, radio, magazines, Internet)." The mean scores for each news media area (all, national, local, agricultural) are provided in Tables 2-9.

When asked about their perceptions of topics in their agricultural discipline as reported in all news media, respondents perceived that most news media reports were fairly neutral, with most of the responses tending to be slightly more negative on the five-point scale than positive. The respondents felt most strongly that stories were more biased than unbiased. The mean for each response scale item is provided in Table 2.

Table 2

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in All News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **all** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 3.16 | .711 |
| Balanced (1), Unbalanced (5) | 61 | 3.18 | .885 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.21 | .819 |
| Accurate (1), Inaccurate (5) | 61 | 3.26 | .835 |
| Biased (1), Unbiased (5) | 50 | 2.44 | .884 |

*Descriptor word sets were on a five-point scale.

Respondents felt that coverage of stories on topics in their agricultural discipline as reported by local news media was more positive, although, again, the tendency was to hover around a neutral stance. The respondents felt most strongly that stories were more fair than unfair. The mean for each response scale item is provided in Table 3.

Table 3

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in Local News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **local** news media are: | | | |
| *Fair (1), Unfair (5) | 62 | 2.42 | .615 |
| Balanced (1), Unbalanced (5) | 62 | 2.76 | .824 |
| Trustworthy (1), Untrustworthy (5) | 62 | 2.76 | .848 |
| Accurate (1), Inaccurate (5) | 62 | 3.05 | .876 |
| Biased (1), Unbiased (5) | 61 | 2.98 | .922 |

*Descriptor word sets were on a five-point scale.

When asked about their perceptions of topics in their agricultural discipline as reported in national news media, respondents indicated that news reports were more negative than positive in each category. Respondents noted that national news reports were more biased than unbiased, untrustworthy rather than trustworthy, inaccurate rather than accurate, unbalanced rather than balanced, and unfair rather than fair. The mean for each response scale item is provided in Table 4.

Table 4

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in National News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **national** news media are: | | | |
| *Fair (1), Unfair (5) | 62 | 3.37 | .854 |
| Balanced (1), Unbalanced (5) | 62 | 3.47 | .918 |
| Trustworthy (1), Untrustworthy (5) | 62 | 3.50 | .937 |
| Accurate (1), Inaccurate (5) | 61 | 3.49 | .924 |
| Biased (1), Unbiased (5) | 62 | 2.40 | 1.108 |

*Descriptor word sets were on a five-point scale.

Respondents were generally positive about the coverage of topics in their agricultural discipline as reported in agricultural news media, although only slightly so in the biased/unbiased descriptor set. The mean for each response scale item is provided in Table 5.

Table 5

*Agricultural Scientists' Perceptions of Topics from Their Agricultural Discipline Reported in Agricultural News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of topics in your agriculture discipline, stories covered by **agricultural** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 2.20 | .771 |
| Balanced (1), Unbalanced (5) | 61 | 2.53 | .970 |
| Trustworthy (1), Untrustworthy (5) | 62 | 2.29 | .837 |
| Accurate (1), Inaccurate (5) | 62 | 2.24 | .761 |
| Biased (1), Unbiased (5) | 62 | 3.05 | 1.137 |

*Descriptor word sets were on a five-point scale.

In terms of coverage of general scientific topics covered in all news media, respondents perceived that science stories were reported more negatively than positively. The mean for each response scale item is provided in Table 6.

Table 6

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in All News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **all** news media are: | | | |
| *Fair (1), Unfair (5) | 60 | 3.03 | .758 |
| Balanced (1), Unbalanced (5) | 61 | 3.20 | .726 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.28 | .636 |
| Accurate (1), Inaccurate (5) | 61 | 3.39 | .714 |
| Biased (1), Unbiased (5) | 61 | 2.57 | .865 |

*Descriptor word sets were on a five-point scale.

For local news media's coverage of general scientific topics, agricultural respondents perceived that local news stories were more positive in three descriptor sets, except for biased/unbiased and accurate/inaccurate. The mean for each response scale item is provided in Table 7.

Table 7

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in Local News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **local** news media are: | | | |
| *Fair (1), Unfair (5) | 60 | 2.53 | .700 |
| Balanced (1), Unbalanced (5) | 60 | 2.78 | .761 |
| Trustworthy (1), Untrustworthy (5) | 61 | 2.82 | .866 |
| Accurate (1), Inaccurate (5) | 61 | 3.07 | .892 |
| Biased (1), Unbiased (5) | 61 | 2.97 | .823 |

*Descriptor word sets were on a five-point scale.

Interestingly, respondents were critical of national news coverage of general scientific topics. Perceptions of each descriptor set were generally negative. The mean for each response scale item is provided in Table 8.

Table 8

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in National News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **national** news media are: | | | |
| *Fair (1), Unfair (5) | 61 | 3.23 | .824 |
| Balanced (1), Unbalanced (5) | 61 | 3.46 | .848 |
| Trustworthy (1), Untrustworthy (5) | 61 | 3.43 | .884 |
| Accurate (1), Inaccurate (5) | 61 | 3.34 | .929 |
| Biased (1), Unbiased (5) | 61 | 2.39 | .954 |

*Descriptor word sets were on a five-point scale.

Finally, respondents were asked to provide their perception of general scientific topic coverage in agricultural news media. Respondents' perceptions of story coverage were positive in each category. The mean for each response scale item is provided in Table 9.

Table 9

*Agricultural Scientists' Perceptions of General Scientific Topics Reported in Agricultural News Media*

| Response scale item | *N* | *M* | *SD* |
|---|---|---|---|
| **Question**: In the reporting of general scientific topics, stories covered by **agricultural** news media are: | | | |
| *Fair (1), Unfair (5) | 59 | 2.46 | .897 |
| Balanced (1), Unbalanced (5) | 60 | 2.60 | .827 |
| Trustworthy (1), Untrustworthy (5) | 59 | 2.47 | .897 |
| Accurate (1), Inaccurate (5) | 60 | 2.50 | .792 |
| Biased (1), Unbiased (5) | 59 | 3.05 | 1.090 |

*Descriptor word sets were on a five-point scale.

## Discussion and Conclusions

In general, the members of the Southern Association of Agricultural Scientists who participated in this study had been employed in universities for several years, as indicated by their academic rank, were male, and were more representative of the physical and biological sciences (agronomy, animal science, biochemistry, horticulture, plant pathology, soil and water conservation), than the social sciences (agricultural communications, agricultural economics, agricultural education, rural sociology). A limitation of the study was the relatively low response rate, especially in the social science fields, which limits the generalizability of these findings. This may be due to individuals in these fields not seeing themselves as scientists, but more as academics and researchers. If so, this represents an interesting potential area for future research.

Respondents' answers tended to fall in the middle of the five-point Likert-type scale on most of the descriptor sets (fair/unfair, biased/unbiased, trustworthy/untrustworthy, accurate/inaccurate, and balanced/unbalanced). However, the tendency was to be more negative than positive. Respondents were more negative of all news coverage and national news coverage of general scientific topics and topics from

their agricultural disciplines, but more positive about local news and agricultural news coverage of science and agricultural stories. They were most favorably disposed toward agricultural news coverage and least favorably disposed toward national news media coverage. A possible reason for the favorable perception of agricultural news coverage is that they may believe agricultural news reporters are generally knowledgeable about their disciplines and, thus, can ask the right questions and present the information in such a way as to get the facts correct.

As for the positive perception of local news coverage of scientific and agricultural stories, agricultural scientists may believe that the proximity of local reporters may allow scientists some "control" over the story because reporters can spend more time with scientists and follow up with them with questions. The negative tendency toward national news may be that agricultural scientists see the national news as only printing or broadcasting bad or unfavorable news about any topic; they then translate that into national news outlets reporting bad news about general scientific or agricultural topics. They also may have seen previous stories where national news reporters did a poor job of reporting the facts on complex scientific topics.

Respondents were more favorable in their perceptions of general science coverage than of stories in their agricultural discipline. This may be because respondents have more knowledge of agricultural topics and, therefore, can be more critical of the content of agricultural discipline-specific stories. Respondents were more apt to perceive stories negatively in the biased/unbiased descriptor set than in the four other descriptor sets. They also were more apt to perceive stories positively in the fair/unfair set than in the other sets.

Overall, results indicate that agricultural scientists have neutral to negative perceptions of all news media and national news media. They are more positive about local and agricultural news media. These perceptions could help media relations professionals design and develop workshops to help agricultural scientists work with reporters. If most of the agricultural scientists' interactions will be with agricultural or local reporters, media relations workshops could be designed to strengthen the perceptions scientists already have of these two news media types. Training workshops also could be tailored to help scientists develop messages that could be more positively presented in national news media.

## References


Dillman, D. A. (1999). *Mail and Internet surveys: The tailored design method, Second Edition.* New York: John Wiley and Sons.

Gascoigne, T., & Metcalfe, J. (1997). *Incentives and impediments to scientists communicating through the media.* Retrieved February 12, 2003, from http://www.usyd.edu.au/su/fasts/1997/GascoigneMetcalfe.html.

Hartz, J., & Chappell, R. (1997). *Worlds apart.* Tennessee: First Amendment Center.

Malone, R. E., Boyd, E., & Bero, L. A. (2000). Science in the news: Journalists' constructions of passive smoking as a social problem. *Social Studies of Science,* 30(5), 713-735.

Nelkin, Dorothy. (1995). *Selling science: How the press covers science and technology.* New York: W. H. Freeman.

Southern Association of Agricultural Scientists. (2002). *Introduction to the Southern Association of Agricultural Scientists.* Retrieved November 15, 2002, from http://cals.agnis.vt.edu/~saas/navigator/intro.html.

Stringer, S., & Thomson, J. (1999, June 12-16). *Defining agricultural issues: Daily newspapers editors' perspectives*. Paper presented at Agricultural Communicators in Education/National Extension Technology Conference, Knoxville, Tennessee.

# Media Relations Skills and Training Needs of Southern Agricultural Scientists

**Lisa Lundy**
Graduate Student
University of Florida
lklundy@mail.ifas.ufl.edu

**Ricky Telg**
Associate Professor
University of Florida
rtelg@mail.ifas.ufl.edu

**Tracy Irani**
Assistant Professor
University of Florida
irani@ufl.edu

**Deanna Locke**
Graduate Student
University of Florida
hogswild@aol.com

Department of Agricultural Education & Communication
P.O. Box 110540
University of Florida
Gainesville, FL 32611-0540
(352) 392-0502
FAX: (352) 392-9585

**Media Relations Skills and Training Needs of Southern Agricultural Scientists**


## Abstract

This study examined the media relations skills and media training needs of Southern agricultural scientists. A stratified random sample of 300 Southern Association of Agricultural Scientists was drawn from the association's online member directory. Sixty-two agricultural scientists responded to the online, Web-based survey, for a response rate of 20.6%. Respondents were more representative of the physical and biological sciences than the social sciences and were predominantly male. Most respondents had been interviewed by a reporter at least once during the previous year and had positive experiences in the interview process. Respondents were confident in their media relations capabilities. Approximately two-thirds had taken some type of media relations training and were positive about what they had learned. Respondents also would be likely to take media relations training, even on topics which they had taken training in previously. Areas in which respondents said they would be most likely to take training were communicating effectively in crisis situations and writing newspaper columns. The media relations training that respondents had undertaken was seen as valuable; SAAS members said the training was beneficial, satisfying, and positive. This finding indicates that current media relations training efforts at universities or agriculture-related institutions are making a direct and positive impact on agricultural scientists, and that scientists are using what they have learned.

**Media Relations Skills and Training Needs of Southern Agricultural Scientists**

## Introduction

The news media play a critical role as one of the primary means through which scientific and health-related issues are brought to the attention of the general public (Malone, Boyd, & Bero, 2000). The reality of science for most people is what they experience through mass media channels (Nelkin, 1995). Good reporting allows people to evaluate science policy issues and make rational personal choices; poor reporting can mislead a public that is increasingly affected by science (Nelkin, 1995). Significant developments in science and technology, major treatments of diseases, and developments with practical applications for medicine and agriculture attract journalistic attention (EFB Task Group on Public Perceptions of Biotechnology, 1996).

Because of this diffusion of science information through the news media, media researchers and practitioners have stressed the need for the science and journalism disciplines to collaborate through media relations training (Gascoigne & Metcalfe, 1997; Metcalfe & Gascoigne, 1997). Metcalfe and Gascoigne (1997) conducted two-day media skills workshops for scientists in Australia for nine straight years. Prior to the workshops, an assessment indicated that participants believed journalists generalized their stories, were not hard-working individuals, and viewed scientists negatively. The studies of 178 Australian scientists showed that after participating in the workshops, most scientists believed journalists were helpful, reliable, accurate, trustworthy, interested, and hard-working.

In a study of scientists and journalists (Reed, 2001) results indicated that scientists and journalists believe education about the media was seen as more relevant for scientists

than education about science for journalists, because science contains complex and difficult-to-understand issues. According to Reed and Walker (2002), many journalists opt out of studying science in school, so when they are assigned to science stories, they are unlikely to welcome science education. Nelkin (1995) stated that many journalists agree on the need for greater technical education when it comes to science, but some journalists argue that too much science education can be costly to the reporter; if journalists know too much about a technical subject, their writing may become overspecialized and difficult for the public to understand. Reed's study (2001) also showed that media-aware scientists were seen as potential trainers for other scientists about the media.

Hartz and Chappell (1997) reported that journalists complained about scientists being intellectual, immersed in their own jargon, and failing to explain their work simply, whether to reporters or the public. Reporters also said scientists needed to communicate about an issue that is relevant to the reader or viewer because science research is often complex. Results also indicated that journalists have a great deal of confidence in scientists. About 80% of journalist respondents found scientists somewhat accessible, but 7% found them not accessible at all (Hartz & Chappell, 1997).

The issue of media relations training – skills on how to work with, be interviewed by, and contribute to the news media – for scientists is one with which the scientific community continues to wrestle. Scientists hold high standards for themselves, when it comes to peer review, and focus most of their efforts on peer communication; this leads to a lack of communication skills with journalists (Nelkin, 1995). F. Sherwood Rowland, 1993 president of the American Association for the Advancement of Science, attributed

the most serious problems among scientists and journalists to a lack of communication (Nelkin, 1995).

Results from Gascoigne and Metcalfe's study (1997) indicated the following: scientists with little or no media relations training are more suspicious of the media; media relations skills are valued by those who have undertaken media relations training; and scientists realized increased research funding, better corporate image, and higher public accountability as benefits of working with the media. Scientists also regarded their lack of time as a major obstacle to working with the media. Hartz and Chappell (1997) found that scientists who are inexperienced in media training are fearful of misrepresentation and inaccuracy. They see the media as exploitive, manipulative, and sensationalistic in their reporting of scientific findings.

In many instances, research universities, private research organizations, government organizations, pharmaceutical companies, non-profit health associations, and public relations firms hire science public relations specialists, trained in both science and journalism, to accomplish the goal of public visibility and mass media interest (Duke, 2002). They cover issues such as medicine and health care, energy, technological developments, and environmental issues (Duke). Several science-related organizations routinely collaborate with public relations professionals and journalists to get reporters interested in their goals (Nelkin, 1995).

One subset of the scientific community is agricultural science. However, even though agriculture is important to America's economic, environmental, and cultural growth, agricultural news is surprisingly a neglected topic in the mass media (Stringer & Thomson, 1999). An exception to this lack of coverage of agricultural topics is

agricultural biotechnology. Since the introduction of foods derived from bioengineered crops, agricultural biotechnology has been an intense subject of scientific and public debate (Hallman & Metcalfe, 1995). Hoban (1998), in a study on consumer attitudes about agricultural biotechnology, found that consumers get most of their information about biotechnology primarily from the mass media.

In November 2000, Hagins, Lockaby, Akers, and Lance (2002) conducted a content analysis of Associated Press wire service stories that included agricultural stories in order to determine the number and size of agricultural stories and to assess the agricultural literacy of reporters. Between 1997 and 2000, there was a 22% increase in the number of agricultural stories on the Associated Press newswire. Researchers also found that the majority of sentences in the agriculture news stories were not attributed to a source. Based on their findings, the researchers recommended that those within the agricultural industry should have media training programs to teach them how to talk to and work with the news media. The researchers stated if agricultural professionals learn to work with the news media, reporters would have more access to knowledgeable sources in the agricultural industry so that factual and verifiable agricultural information can be disseminated through the media (Hagins, et al, 2002).

Given the importance of providing information to the public through the news media and the lack of overall agricultural topics in the news, the question of whether agricultural scientists believe they have been adequately prepared and/or possess the necessary media relations skills to work with the news media, must be raised. Therefore, the purpose of this study was to determine the need for specific media relations training among scientists working in agriculturally related disciplines. Objectives of the study

were to assess perceptions of a sample of agricultural scientists located in the southern region of the U.S. as to (1) their media relations interview and training experiences; (2) their confidence in their ability to communicate with news media, and (3) specific media relations training needs. By identifying the media relations training needs of agricultural scientists, training experts will be able to develop materials to better equip these scientists with the skills needed to communicate effectively about their discipline with the news media.

## Methodology

The target population for this study was the membership of the Southern Association of Agricultural Scientists (SAAS). SAAS members are agricultural leaders in education and industry who promote the interests of Southern agriculture (Southern Association of Agricultural Scientists, 2002). SAAS is comprised of a diverse group of academics and professionals in the agricultural sector of 13 Southern states.

To conduct the study, a stratified random sample (n=300) of SAAS members was drawn from the association's online member directory. In order to stratify the sample, the entire SAAS membership directory was first grouped according to scientific discipline (agricultural communications, agricultural economics, agricultural education, agronomy, animal science, biochemistry, horticulture, plant pathology, rural sociology, and soil and water conservation). Only members with complete directory information (name, discipline, and e-mail address) were accessed. Every third member from each discipline was selected to randomize the sample.

The study utilized a 17-item, researcher-developed survey instrument that was descriptive in nature. The instrument included sections on scientists' perceptions of news

media, their experiences with being interviewed by news media, their level of confidence/need for training in working with the media, and demographics. All items, with the exception of demographics, utilized five-point Likert-type scales for each response stem.

To assure face and content validity, a panel of experts, comprised of media relations experts reviewed the survey; it was subsequently revised to reflect panel members' suggestions. The resulting instrument was then pilot tested with a subsample (n=17) of SAAS members who were not included in the final study. The results of the pilot study were used to further refine the instrument for delivery to the sample for the actual study.

The survey was developed as an online, Web-based survey, using form development and data collection procedures as outlined by Dillman (1999). To initiate the survey, respondents first received an email cover letter informing them about the Web-based survey and providing them with a respondent code to keep track of respondents and non-respondents. After the initial posting of the Web-based survey, two weeks were given for respondents to return the survey. A follow-up reminder was then sent to nonrespondents. A third and final reminder was sent one month later. Survey response date was utilized to assess reliability of the instrument, resulting in a Chronbach's alpha for the overall scale of .86.

## Results

Of the 300 SAAS members surveyed, 62 agricultural scientists responded, for a response rate of 20.6%. Eight-five percent (n=53) of respondents were male and 15% (n=9) were female. The majority of respondents had been employed in a university

setting for several years; slightly more than half were at the associate professor (20%; n= 12) or full professor (31%, n =19) levels. However, 28% (n=17) said their job title fell in the "other" category, with most stating their titles were "government scientist" and "Experiment Station director or superintendent." Just over 88% (n=54) of respondents currently were employed at a university. Table 1 shows the number and percentage of respondents by discipline.

Table 1

***Respondents According to Academic Discipline***

| Academic Discipline | *N* | Percent |
|---|---|---|
| Agricultural Communications | 0 | 0 |
| Agricultural Economics | 13 | 21 |
| Agricultural Education | 1 | 2 |
| Agronomy | 11 | 17 |
| Animal Science | 13 | 21 |
| Biochemistry | 1 | 2 |
| Horticulture | 12 | 19 |
| Plant Pathology | 3 | 5 |
| Rural Sociology | 1 | 2 |
| Soil & Water Conservation | 3 | 5 |
| Other | 4 | 6 |
| | 62 | 100 |

Respondents were asked how many times within the past year a news reporter had interviewed them. More than 70% of respondents had been interviewed at least once during the previous year, with 11.7% having been interviewed 10 or more times. Two did not answer this question. (See Table 2.)

Table 2

*Number of Times Respondents Were Interviewed in Previous Year*

| Number of Times | *N* | Percent |
|---|---|---|
| 0 | 17 | 28.3 |
| 1-3 | 24 | 40 |
| 4-6 | 10 | 16.7 |
| 7-9 | 2 | 3.3 |
| 10 or more | 7 | 11.7 |
| | 60 | 100 |

Those who had not been interviewed in the previous year were asked to provide a reason why they had not given an interview. Sixty percent (n=11) responded that a reporter had not contacted them, one respondent did not have time for interviews, another does not grant any news interviews, and two respondents indicated that the news media "do not understand the agricultural discipline." Four respondents provided other reasons for not doing an interview, including "reporters weren't interested in my field" and "other people are assigned to talk to reporters."

The 43 respondents who had been interviewed in the previous year also were asked to describe their perceptions of their news interview experiences. Five sets of bipolar adjectives, each on a one-to-five-point semantic differential scale, were utilized. The sets of descriptors were "positive" (1) to "negative" (5), "nervous" (1) to "calm" (5) "frustrating" (1) to "satisfying" (5), "beneficial" (1) to "harmful" (5), and "helpful" (1) to "unhelpful" (5). The mean for each set of descriptors is provided in Table 3. Findings showed that respondents felt that their experiences were more positive, beneficial, and helpful than negative, harmful, and unhelpful. They also felt their experiences were slightly more "frustrating" than "satisfying" and "nervous" as opposed to "calm."

Table 3

***Respondents' Perceptions of Their Interview Experiences***

| Response scale item | *N* | *Mean* | *SD* |
|---|---|---|---|
| *Positive (1), Negative (5) | 43 | 2.05 | .72 |
| Nervous (1), Calm (5) | 44 | 3.61 | 1.22 |
| Frustrating (1), Satisfying (5) | 43 | 3.44 | .85 |
| Beneficial (1), Harmful (5) | 43 | 2.07 | .66 |
| Helpful (1), Unhelpful (5) | 43 | 2.16 | .65 |

*Descriptor word sets were on a five-point scale.

Respondents were then asked if they had ever had training on how to work with the news media. Forty respondents said they had had training, 21 had not had training, and one person did not respond. Those who had taken news media training were asked to describe the training they had received. Again, five sets of bipolar adjectives, each on a one-to-five-point semantic differential scale, were utilized. The sets of descriptors were "adequate" (1) to "inadequate" (5), "positive" (1) to "negative" (5), "frustrating" (1) to "satisfying" (5), "beneficial" (1) to "harmful" (5), and "helpful" (1) to "unhelpful" (5). The mean for each response scale item is provided in Table 4. Overall, findings showed that respondents' felt their media training experiences were more adequate, positive, satisfying, beneficial and helpful than inadequate, negative, frustrating, harmful and unhelpful.

Table 4

*SAAS Members' Media Training Experiences*

| Response scale item | *N* | *Mean* | *SD* |
|---|---|---|---|
| *Adequate (1), Inadequate (5) | 23 | 2.61 | 1.03 |
| Positive (1), Negative (5) | 23 | 2.13 | .69 |
| Frustrating (1), Satisfying (5) | 23 | 3.26 | .92 |
| Beneficial (1), Harmful (5) | 23 | 2.22 | .80 |
| Helpful (1), Unhelpful (5) | 23 | 2.22 | .80 |

*Descriptor word sets were on a five-point scale.

SAAS member respondents were asked to indicate, on a scale of 1 to 5 with 1 being "very confident" and 5 being "very unconfident," how confident they were in their news media relations capabilities in several response areas. (See Table 5.) Overall, respondents indicated they were confident or very confident in their news media relations capabilities, except in establishing a news media relations program.

Table 5

*Respondents' Confidence in Their News Media Relations Capabilities*

| | ***N*** | ***Mean*** | ***SD*** |
|---|---|---|---|
| *Being interviewed by a reporter. | 62 | 2.26 | .94 |
| Establishing a news media relations program. | 59 | 3.29 | 1.08 |
| Contacting the news media. | 62 | 2.76 | 1.21 |
| Communicating effectively to the news media in a crisis situation. | 62 | 2.73 | 1.13 |
| Writing a newspaper column. | 62 | 2.24 | 1.02 |

*Five-point scale, with 1=very confident to 5=very unconfident.

Survey participants then were asked to indicate, on a scale of 1 to 5 with 1 being "very likely" and 5 being "very unlikely," which media relations skill areas they would take training in if it were available. Results indicated that 68% (n=42) of respondents would be very likely or likely to learn how to be interviewed by a news reporter, and 14.8% would be unlikely or very unlikely to learn how to be interviewed. Thirty-five percent (n=22) would be unlikely or very unlikely to learn how to establish a media relations program, and 44% (n=27) would be likely to learn how to establish a news media relations program. Fifty percent would be likely or very likely to learn how to contact the news media; 24% would be unlikely or very unlikely to learn how to contact the news media. Seventy-six percent (n=47) would be likely or very likely to learn how to communicate in a crisis situation; while only 9.7% (n=6) would be unlikely or very unlikely to learn how to communicate to the media in a crisis situation. Thirty-eight respondents (61.3%) would be likely or very likely to learn how to write a newspaper

column, and 11 (17.8%) would be unlikely or very unlikely to learn how to write a newspaper column.

## Discussion and Conclusions

In general, the members of the Southern Association of Agricultural Scientists who participated in this study had been employed in universities for several years, as indicated by their academic rank, were male, and were more representative of the physical and biological sciences (agronomy, animal science, biochemistry, horticulture, plant pathology, soil and water conservation), than the social sciences (agricultural communications, agricultural economics, agricultural education, rural sociology).

Most respondents had been interviewed at least once during the previous year and had positive experiences in the interview process. Those who had not been interviewed in the past year indicated the reason was that a reporter had not called them. This may indicate that reporters are not aware of what the scientists do or see how what agricultural scientists do impact the readers or viewers in their geographic area. Media relations training on how to contact news reporters or how to establish a news media relations program may help scientists pitch news stories to reporters, or a university's news and public affairs department may need to learn more about the agricultural science research being conducted so the news and public affairs department, on behalf of the scientists, could pitch news stories. Still, agricultural scientists may need to take the initiative and contact their university's news and public affairs department to inform the department about the agricultural research being conducted.

Respondents were confident in their media relations capabilities, ranging from being interviewed by a news reporter to writing a newspaper column. Approximately

two-thirds had taken some type of media relations training and were positive about what they had learned. Respondents also would be likely to take media relations training, even on topics which they had taken training in previously, indicating that respondents may not be as confident about their media relations capabilities as they purported in this study, or that they are willing to take training – even in areas that they have had previous training – to stay "sharp." Areas that respondents said they would be most likely to take training were communicating effectively in crisis situations and writing newspaper columns.

It would appear that agricultural scientists have had media relations training and have ready access to ongoing training. The media relations training was seen as valuable; SAAS members said the training was beneficial, satisfying, and positive. This finding indicates that current media relations training efforts at universities or agriculture-related institutions are making a direct and positive impact on agricultural scientists. This also indicates that because of the positive training experience that agricultural scientists had, coupled with the number of interviews that SAAS scientists granted in the previous year, the training is paying off; scientists are using what they have learned. The greatest evidence of this pay-off is that 45 of the 62 respondents granted at least one interview in the previous year, and of that number seven had granted 10 or more interviews during the year; reporters would not keep going back to a source if that source was not capable of providing a good interview.

A limitation of the study was the relatively low response rate, especially in the social science fields, which limits the generalizability of these findings. This may be due to individuals in these fields not seeing themselves as scientists, but more as academics

and researchers. If so, this represents an interesting potential area for future research. It would seem reasonable that social scientists, trained in the dynamics of human perception, would be likely candidates to do an effective job of presenting their findings with respect to societal responses to agricultural sciences, especially in controversial areas. A recommendation from this study would be to conduct a follow-up study exclusively with SAAS member social scientists, in an attempt to assess perceptions as to their role and identification as scientists, and to include items from the original survey instrument so as to compare responses to scientists in the physical and biological fields.

## References


Dillman, D. A. (1999). *Mail and Internet surveys: The tailored design method, 2nd Edition.* New York: John Wiley and Sons.

Duke, S. (2002). Wired science: Use of the World Wide Web and e-mail in science public relations, *Public Relations Review,* 28(3), 311-24.

EFB Task Group on Public Perceptions of Biotechnology. (1996). *Dealings with the media.* Retrieved March 5, 2003, from http://www.bioportfolio.com/efb5.htm.

Gascoigne, T., & Metcalfe, J. (1997) *Incentives and impediments to scientists communicating through the media.* Retrieved February 12, 2003, from http://www.usyd.edu.au/su/fasts/1997/GascoigneMetcalfe.html

Hagins, S., Lockaby, J., Akers, C., & Lance, K. (2002). *Associated Press wire service coverage of agricultural issues*. Paper presented at the meeting of the Southern Association of Agricultural Scientists, Agricultural Communications Section, Orlando, FL.

Hallman, W. K. & Metcalfe, J. (1995). *Public perceptions of agricultural biotechnology: A survey of New Jersey residents.* Retrieved March 5, 2003, from USDA National Agricultural Library at http://www.nal.usda.gov/bic/Pubpercep/.

Hartz, J., & Chappell, R. (1997). *Worlds apart.* Tennessee: First Amendment Center.

Hoban, T. J. (1998). Trends in consumer attitudes about agricultural biotechnology. *AgBioForum,* 1(1). Retrieved March 5, 2003, from http://www.agbioforum.org/v1n1/v1n1a02-hoban.htm.

Metcalfe, J., & Gascoigne, T. (1997). *Media skills workshops: Breaking down the barriers between scientists and journalists.* Retrieved March 5, 2003, from http://www.pantaneto.co.uk/issue3/Metcalfe.htm.

Nelkin, Dorothy. (1995). *Selling science: How the press covers science and technology.* New York: W. H. Freeman.

Reed, R. (2001). (Un-)professional discourse? *Journalism,* 2(3), 279-298.

Reed, R., & Walker, G. (2002). Listening to scientists and journalists. *Science Journalism,* Fall 2002, 45-46.

Southern Association of Agricultural Scientists. (2002). *Introduction to the Southern Association of Agricultural Scientists.* Retrieved November 15, 2002, from http://cals.agnis.vt.edu/~saas/navigator/intro.html.

Stringer, S., & Thomson, J. (1999, June 12-16). *Defining agricultural issues: Daily newspapers editors' perspectives*. Paper presented at Agricultural Communicators in Education/National Extension Technology Conference, Knoxville, Tennessee.

# Turf for Texans: Basic to Advanced Turfgrass Instructional Modules for the Texas Master Gardener Program

Chyrel A. Mayfield[1]

Gary J. Wingenbach[2]

David R. Chalmers[3]

Texas A&M University

Department of Agricultural Education

2116 TAMU

College Station, Texas 77843-2116

Phone: 979-862-1507

FAX: 979-845-6296

Email: cmayfield@aged.tamu.edu

g-wingenbach@tamu.edu

dchalmers@tamu.edu

**RESEARCH PAPER**

[1] Chyrel A. Mayfield is a graduate student and research assistant in the Department of Agricultural Education at Texas A&M University.
[2] Gary J. Wingenbach is an Assistant Professor of agricultural communications and journalism in the Department of Agricultural Education at Texas A&M University.
[3] David R. Chalmers is an Extension Turfgrass Specialist and Associate Professor in the Department of Soil and Crop Sciences at Texas A&M University.

Abstract

State budgets for extension programming continue to decline nationwide, despite rising demand for educational programs at the local level. Turfgrass specialists and extension educators responsible for developing educational materials in the Texas Master Gardener Program sought stakeholder input for an innovative curriculum by using innovative data collection methods. The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions (FAQs) in basic to advanced turfgrass management curricula for the *Turf for Texans* Master Gardener Program. A proportional stratified sample ($n$ = 66) of county agents, master gardener program coordinators, and volunteers from 11 Texas Cooperative Extension Service districts responded to this Web-based, modified Delphi study.

Participants identified, ranked, and rated 37 FAQs in the basic modules (Introduction to Texas Lawn Care, How Lawn Grasses Grow, and Grass Species and Varieties Adapted for Texas) and 42 FAQs in the advanced modules (Nutrient Management, Irrigation Matters in Texas, and Pests and Integrated Pest Management). Turfgrass specialists and extension educators used the prioritized information to further develop the *Turf for Texans* instructional modules.

Interactive, online data collection methods provided rapid feedback in the consensus-building process. In times of shrinking financial support for extension programming, agricultural communications professionals and county extension agents can use this methodology to develop similar consensus-building activities for other extension programming issues. Stakeholder input can be achieved, with minimum time and expense, while curriculum developers will not waste time developing materials that clientele will not find useful.

Keywords: Extension, Master Gardeners, FAQs, Delphi, CD-ROM Instructional Modules

## Introduction

Cooperative extension has a rich history of developing outreach programs that have a direct and relevant impact on stakeholders' lives. In order to develop relevant programming, clientele are asked for input during the development stages for many programs. Often, requesting and incorporating timely and relevant input to program curricula can be a time-consuming, expensive process. Decreasing state and federal resources are forcing extension personnel to seek alternative methods to continue their rich tradition of stakeholder input in the program curricula development processes.

Extension education programs have traditionally been offered in a workshop format. This format has allowed for direct interaction with participants, which fosters knowledge and experience exchanges that provide ideas for future workshops. Some drawbacks of the workshop format include the amount of time needed to complete the workshop and fiscal constraints placed on extension personnel.

## Conceptual Framework

The cooperative extension service uses various learning formats in delivering educational programs to extension clientele. These formats have included television, interactive satellite, and Web-based delivery methods.

Closed circuit television was the learning format used in Indiana to teach swine breeding to extension clientele. The topics included reproduction, housing, nutrition, and disease immunity. Closed circuit television sessions replaced county swine producer meetings. Results from pre- and post-tests to measure learning comprehension showed that participants' learning scores were increased by over 27% (Branson & Davis, 1985). This early study showed that

extension clientele were willing to learn, and did learn technical subject matter, using new educational technologies.

A program on weight control and exercise was delivered via cable television to 300 leaders from northeastern Minnesota (Sunnarborg, Bradley, & Haynes, 1988). A group of fifty experimental subjects were selected from the pre-registrants. A group of fifty control subjects were selected from previous extension program participants. The control group was not allowed to view the cable television program. A pre- and two post-tests were administered to the groups. A total of 25 control and 21 experimental subjects completed all the tests. The findings revealed that the experimental group increased their knowledge scores by 23%. The experimental group had a higher percentage of participants who followed a planned exercise plan after the program. Participants from each group did exercise three or more times a week and reduced their caloric intake. The results indicate that television could be used effectively to teach weight control and exercise issues to extension clientele.

Educational delivery methods and techniques have changed much since 1988. Researchers in Texas used interactive video, the Trans-Texas Videoconference Network, to produce a seven-hour Food Protection Management instructor training seminar in 1996. Dooley, Van Laanen, and Fletcher found that a majority of students (71.9%) felt the training at a distance was as effective as face-to-face training. Students recommended overwhelmingly (96.6%) that technology be used for future trainings. Students' self-reported knowledge levels also showed a substantial increase in knowledge of food protection management techniques. Students who reported their knowledge levels as "very knowledgeable," increased from 14.6% to 51.7%. Prior to the training session, those reporting little knowledge of the material was 21.4% of the population. No students reported they had "little knowledge" after the training. Although this

study used distance education techniques only, it can be concluded that this delivery method was successful in teaching food protection management techniques to students in Texas.

Researchers in Arizona compared students in a traditional sports nutrition workshop with students in a workshop taught using satellite television. Ricketts, Hoelsher-Day, Begeman, and Houtkooper (2001) reported no significant differences between groups in average scores on evaluation items. Their results further supported the idea that learning comprehension was not dependent on delivery format used to teach the subject.

A traditional water quality workshop was compared with a satellite broadcast in Pennsylvania. Swistock, Sharpe, and Dickison (2001) found the satellite program to be as effective as the traditional workshop. The workshop objective (at least 20% of workshop participants will test their water after the program) was met easily by both the traditional and satellite students. Researchers also measured how many attendees learned at least two new ideas in both formats. Results indicated that twice as many individuals in the satellite program learned two new ideas when compared to the traditional workshop format. Another finding revealed that the cost of the satellite program was 2.3 times less than the cost of the traditional workshop sessions. This study supports the idea that distance education formats can be as effective, and less expensive to deliver, as traditional face-to-face workshops.

Rost and VanDerZanden (2002) used a basic soils online learning module, developed for the Oregon State University Extension Service Master Gardener Program, to compare learning performances of two groups of extension clientele. One group of participants completed the online module in their homes, while the other group completed the module in a face-to-face classroom setting. Learning (knowledge gain scores) was evaluated using a pre-/post-test design. Rost and VanDerZanden found no significant differences in knowledge gained between the

groups. Their results indicated that educational delivery format was not a factor in learning comprehension.

Alternative methods for collecting stakeholder input to extension program curricula provide extension personnel with timely, relevant feedback during the curricula development process. One inexpensive alternative to holding several face-to-face or traditional postal mail surveys is achieved through the modified Delphi technique, using a Web-based medium.

The Delphi technique was developed by the Rand Corporation in the late 1950's as a forecasting methodology. Unlike the nominal group process, the Delphi does not require face-to-face participation. It is a "systematic solicitation and collation of judgments on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses" (Debecq, Van de Ven, & Gustafson, 1975, p. 10). The Delphi technique affords researchers an opportunity to collect large amounts of input over a wide geographic area. Delphi techniques incorporate expert panel members' opinions, value judgments, and agreement in the consensus-building process (Somers, Baker, & Isbell, 1984).

Decisions about which participants to invite to a Delphi should be considered carefully. Ludwig (1997) recommended:

> Randomly selecting participants is NOT acceptable. Instead, characteristics and qualifications of desirable respondents should be identified and a nomination process used to select participants. Because the group number will be small (12-15), the researcher needs to locate and target individuals who are "expert," have knowledge and experience to base their futuring activities upon, and are self-motivated. Delphi should

not be used with groups that have difficulty in reading or expressing themselves in written communication. (p. 2)

Ladner, Wingenbach, and Raven (2002) found Web-based and traditional paper-based survey methodologies were equally valid and reliable for social science research. A difference between the two groups resulted in the aggregate response rate. The Web-based group's response rate exceeded the traditional group, 72 to 7, within the first week of data collection. This study provides strong evidence for using Web-based surveying methods in social science research.

Previous studies have shown repeatedly that learning technical subject matter is not dependent upon the educational delivery system used to teach extension clientele. While closed circuit television and rapid Internet access may have limitations in rural households, the relatively low cost of computers with CD-ROM drives has not limited families from purchasing and using these technologies in their homes. No studies were found which tested the learning levels of participants using the CD-ROM format. However, prior to testing the CD learning format, it is important to be mindful of extension stakeholder input in developing the materials for CD-based instructional products. Decreasing state funds for extension programming have forced many states to seek alternative methods to continue providing quality educational programs for their clientele at the county level. Extension clientele input for developing instructional modules in the *Turf for Texans Master Gardener Program* was sought using innovative methods.

## Purpose and Objectives

The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions (FAQs) in basic to advanced turfgrass management curricula for the *Turf for Texans* Master Gardener Program. The following objectives guided this study.

1. Identify FAQs for three basic and three advanced turfgrass instructional modules in the *Turf for Texans* Master Gardener Program.
2. Rank the importance of the identified FAQs.
3. Rank participants' agreement levels of the identified FAQs for inclusion in the basic and advanced turfgrass instructional modules.

## Methods and Procedures

Descriptive survey methodology, with a modified Delphi technique, was used in this study. Web-based survey data collection methods (Ladner, Wingenbach, & Raven, 2002) were used after obtaining approval to conduct the study through the Texas A&M University Institutional Review Board (#2002-0276).

The target population ($N = 339$) consisted of all Texas county extension agents, program coordinators, and volunteers who participated in a Texas Master Gardener Program during 2003. A proportional stratified sample from 11 Texas Cooperative Extension Service districts was obtained by contacting two agents from each district, who in turn, chose at least one coordinator and one volunteer from their respective master gardener programs. All participants were sent formal letters requesting their participation in the study. The sample consisted of 22 agents, 22 program coordinators, and 22 volunteers ($n = 66$).

The first instrument consisted of open-ended questions designed to obtain a wide range of responses. Using their own master gardener experiences, county agents, coordinators, and

volunteers identified the top five FAQs for basic and advanced turfgrass management in each of six *Turf for Texans* instructional modules. The identified FAQs were used to develop content for the modules. Electronic mail reminders were sent to non-respondents to complete round one; all data were collected in three weeks. A total of 20 agents, 4 coordinators, and 12 volunteers ($n$ = 36) from 33 counties in the 11 districts responded to round one, resulting in a 55% response rate.

A Q-sort (Kerlinger, 1986) committee formulated the second instrument using participants' FAQs from round one data collection. A team of extension turfgrass specialists, graduate students, and agricultural education faculty members condensed and combined initial responses into statements without altering their original meanings. A panel of experts from the Departments of Soil and Crop Science and Agricultural Education reviewed the instrument for face validity.

In the second round of data collection, respondents were instructed to read each FAQ for each module and rate the level of importance (Likert-type scale: 1 = Not Important…4 = Very Important) for including the FAQ in its respective turfgrass instructional module. Electronic mail notices requesting participation in round two were sent to all 66 participants. A total of 16 agents, 7 coordinators, and 12 volunteers ($n$ = 35) responded, resulting in a 53% response rate. All data were collected in two weeks.

Upon conclusion of data collection in the second round, all statements were ranked according to their grand mean scores, sorted by level of importance, and posted in a third instrument on a secure Internet site. The third instrument allowed respondents to rate their agreement levels (Likert-type scale: 1 = Strongly Disagree…4 = Strongly Agree) with the importance levels for each FAQ in each turfgrass instructional module. Electronic mail notices requesting participation in round three were sent to all 66 participants. A total of 15 agents, 5

coordinators, and 10 volunteers ($n$ = 30) responded, resulting in a 46% response rate. All data were collected in 10 days.

Descriptive statistics were derived for each instructional module. ANOVA tests were used to determine significant differences among subgroups. Instrument reliability was assessed using Cronbach's alpha coefficient in rounds two and three. Module 1 (Introduction to Texas Lawn Care) resulted in a Cronbach's alpha of .83 in round two and .74 in round three. Module 2 (How Lawn Grasses Grow) had Cronbach's alphas of .82 and .89. Module 3 (Grass Species and Varieties Adapted for Texas) had Cronbach's alphas of .77 and .91. Module 7 (Nutrient Management) resulted in a Cronbach's alpha of .86 in round two and .91 in round three. Module 8 (Irrigation Matters in Texas) had Cronbach's alphas of .84 and .91. Module 9 (Pests and Integrated Pest Management) had Cronbach's alphas of .89 and .87.

## Findings

Due to space limitations, only results from the third (final) round of the modified Delphi are presented. Also, the basic and advanced modules were part of a larger study that included three "intermediate" modules, which are not presented in this paper.

Thirty-six respondents with Texas Master Gardener Program experiences ranging from less than one to over 20 years ($M$ = 4.73), identified the top five FAQs for turfgrass management in their Texas Master Gardener Programs. After eliminating duplicates, a total of 10 FAQs were identified for Module 1 (Introduction to Texas Lawn Care). Table 1 illustrates respondents' agreement levels for the 10 FAQs in Module 1 (Introduction to Texas Lawn Care). Results are sorted by descending grand means.

Table 1

*Descriptive Statistics: Introduction to Texas Lawn Care Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| What determines if a lawn is healthy? | 3.15 | 3.40 | 3.00 | 3.14 |
| Are there benefits of having turf in my landscape? | 3.08 | 3.40 | 3.00 | 3.11 |
| What are the environmental benefits of turf? | 3.00 | 3.40 | 3.00 | 3.07 |
| What are the different uses of turfgrass? | 3.00 | 3.20 | 3.10 | 3.07 |
| Are there different levels of lawn maintenance (low, medium, or high and which level should I use for my lawn? | 3.00 | 2.80 | 3.10 | 3.00 |
| What is the definition of a "good" lawn? | 3.08 | 2.80 | 2.80 | 2.93 |
| How can I get help taking care of my lawn? | 2.92 | 2.60 | 2.70 | 2.79 |
| What is the value of the turfgrass industry: growers, retailers, maintenance? | 2.85 | 2.60 | 2.80 | 2.79 |
| What is the basic terminology used in lawn care? | 2.85 | 2.60 | 2.78 | 2.78 |
| What are the good things about having a lawn? | 2.69 | 2.60 | 2.70 | 2.68 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

The consensus-building process of this modified Delphi technique was useful in helping respondents prioritize the most important FAQs in the Introduction to Texas Lawn Care instructional module. Overall, the FAQ deemed most important in round two [*Are there different levels of lawn maintenance (low, medium, or high); which level should I use for my lawn?*], dropped to fifth most important in the third round. The second (*what determines if a lawn is healthy*) and third (*are there benefits of having turf in my landscape*) most important FAQs in round two became the first and second most important in round three. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module.

A slightly similar situation occurred between rounds when respondents rated their agreement levels of the FAQs for Module 2 (How Lawn Grasses Grow). The two most important FAQs in round two (*what techniques can I use to plant grass* and *what are the differences*

*between warm and cool season grasses*) switched positions of importance in round three (Table 2). Although their overall agreement increased for the FAQ concerning *keeping a lawn green all winter*, respondents were least concerned about this FAQ in round three. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module. Results are sorted by descending grand means.

Table 2

*Descriptive Statistics: How Lawn Grasses Grow Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| What are the differences between warm and cool season grasses? | 3.21 | 3.40 | 3.40 | 3.31 |
| What techniques can I use to plant grass? | 3.29 | 3.20 | 3.30 | 3.28 |
| Why do you sod some grasses and others you seed? | 3.15 | 3.60 | 3.20 | 3.25 |
| Why is leaf area important for growth? | 3.07 | 3.00 | 3.30 | 3.14 |
| What conditions are necessary for healthy stem growth? | 3.00 | 3.00 | 3.40 | 3.14 |
| What temperatures are best for root and shoot growth? | 3.14 | 3.40 | 3.00 | 3.14 |
| How do turfgrass roots grow? | 3.07 | 3.20 | 3.00 | 3.07 |
| Are there differences in how turfgrass grows, compared to other landscape plants? | 2.93 | 3.00 | 3.00 | 2.97 |
| Where is the growing point on grass? | 2.93 | 3.00 | 3.00 | 2.97 |
| What conditions induce dormancy in turfgrass? | 3.07 | 2.75 | 2.90 | 2.96 |
| What is the difference between a stolon, a rhizome, and a tiller? | 3.00 | 2.60 | 2.90 | 2.90 |
| Which grass produces the least amount of seed heads? | 3.00 | 3.00 | 2.70 | 2.90 |
| What is the anatomy of lawn grass? | 2.93 | 2.40 | 2.90 | 2.83 |
| How can I keep my lawn green all winter? | 2.86 | 2.80 | 2.70 | 2.79 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

Only the FAQs identified in the third basic turfgrass management instructional module (Grass Species and Varieties Adapted for Texas) had some consistency between the second and third rounds of this modified Delphi study (Table 3). The FAQ, "*what factors should be*

*considered when selecting a lawn grass*," was rated most important in both rounds. The *most economical grass to grow* and *having several grass species in one yard* were the two FAQs ranked lowest in the third round, except they switched positions. No significant differences were found among respondents' agreement levels of the FAQs for this instructional module. Results in Table 3 are sorted by descending grand means.

Table 3

*Descriptive Statistics: Grass Species and Varieties Adapted for Texas Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| What factors should be considered when selecting a lawn grass? | 3.47 | 3.60 | 3.40 | 3.47 |
| How do I decide which grass is best suited for my area? | 3.47 | 3.60 | 3.40 | 3.47 |
| Which grass variety is best suited for me in my area of Texas? | 3.41 | 3.80 | 3.40 | 3.47 |
| What is the most drought-tolerant turfgrass? | 3.29 | 3.80 | 3.60 | 3.47 |
| What is the best turfgrass for shaded areas? | 3.35 | 3.60 | 3.50 | 3.44 |
| Which turfgrass will tolerate heavy traffic? | 3.35 | 3.40 | 3.60 | 3.44 |
| What is the best turfgrass for sunny areas? | 3.29 | 3.40 | 3.50 | 3.38 |
| What are the grass species and their areas of adaptability? | 3.24 | 3.40 | 3.30 | 3.28 |
| What is the best grass for my lawn? | 3.24 | 3.40 | 3.20 | 3.25 |
| What is the most cold-tolerant turfgrass? | 3.06 | 3.00 | 3.10 | 3.06 |
| Are there differences between varieties within species of turfgrasses? | 3.00 | 3.20 | 3.00 | 3.03 |
| Is it okay to have several grasses in one yard? | 3.06 | 3.20 | 2.90 | 3.03 |
| What is the most economical grass to grow? | 3.00 | 2.80 | 3.10 | 3.00 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

In the "advanced" Nutrient Management instructional module, the top two FAQs from round two (*when to fertilize* and *how often to fertilize*) remained the same for round three. Table 4 illustrates respondents' agreement levels for the 15 FAQs in Module 7 (Nutrient Management).

No significant differences were found among respondents' agreement levels of the FAQs identified in the Nutrient Management instructional module. Results are sorted by descending grand means.

Table 4

*Descriptive Statistics: Nutrient Management Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| When do I need to fertilize? | 3.47 | 3.80 | 3.70 | 3.60 |
| How often should I fertilize? | 3.47 | 3.80 | 3.60 | 3.57 |
| How much fertilizer should I apply? | 3.47 | 3.60 | 3.70 | 3.57 |
| What do the numbers on the fertilizer bag mean? | 3.40 | 3.20 | 3.80 | 3.50 |
| Can I use a "weed and feed" product? | 3.53 | 3.00 | 3.50 | 3.43 |
| What are some of the environmental concerns regarding fertilization? | 3.47 | 3.40 | 3.40 | 3.43 |
| What are the differences between pelletized, soluble, and slow release fertilizers? | 3.40 | 3.40 | 3.40 | 3.40 |
| Why is a soil test important? | 3.33 | 3.40 | 3.44 | 3.38 |
| How and where can I get my soil tested? | 3.27 | 3.20 | 3.67 | 3.38 |
| Are there any real differences between all those fertilizers at the garden center? | 3.40 | 3.40 | 3.30 | 3.37 |
| Should all the recommended amounts of nutrients be added at one time or divided into several applications? | 3.33 | 3.60 | 3.10 | 3.30 |
| What are the differences between organic and inorganic fertilizers? | 3.27 | 3.60 | 3.20 | 3.30 |
| If I fertilize more, I have to mow more often; what is a "happy" medium? | 3.13 | 3.20 | 3.00 | 3.10 |
| If I have old fertilizer, can I use it now instead of buying more? | 3.13 | 2.80 | 3.10 | 3.07 |
| What time of day should I apply fertilizer? | 2.93 | 3.00 | 3.00 | 2.97 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

A similar situation occurred between rounds when respondents rated their agreement levels of the FAQs for Module 8 (Irrigation Matters in Texas). The two most important FAQs in round two (*irrigation frequency* and *indicators that lawns need watering*) maintained their

relative importance during round three (Table 5). Again, no significant differences were found among respondents' agreement levels of the FAQs identified in the Irrigation Matters in Texas instructional module. Results are sorted by descending grand means.

Table 5

*Descriptive Statistics: Irrigation Matters in Texas Instructional Module (n = 30)*

| | $M^a$ | | | |
|---|---|---|---|---|
| FAQs | Agents ($n$ = 15) | Coordinators ($n$ = 5) | Volunteers ($n$ = 10) | Grand ($n$ = 30) |
| How often should I water my turfgrass? | 3.67 | 4.00 | 3.78 | 3.76 |
| What is a good indicator that my lawn needs watering? | 3.67 | 4.00 | 3.70 | 3.73 |
| How much water does my lawn need? | 3.60 | 3.80 | 3.70 | 3.67 |
| When should I water my lawn? | 3.60 | 3.80 | 3.60 | 3.63 |
| What are the signs of drought stress? | 3.53 | 3.80 | 3.70 | 3.63 |
| Water runs off my lawn while watering - Why? | 3.53 | 3.60 | 3.60 | 3.57 |
| Do trees in the landscape affect the amount of water required by turfgrass? | 3.60 | 3.80 | 3.30 | 3.53 |
| How do I determine "inches of water" per watering? | 3.60 | 3.20 | 3.60 | 3.53 |
| Should I water shady and sunny areas differently? | 3.40 | 3.60 | 3.30 | 3.40 |
| What is the best sprinkler system to use on turfgrass? | 3.47 | 3.40 | 3.30 | 3.40 |
| How deep should the moisture front be for adequate turf irrigation? | 3.47 | 3.40 | 3.30 | 3.40 |
| Does water quality (in different parts of Texas affect turfgrass? | 3.40 | 3.40 | 3.40 | 3.40 |
| Of loamy and sandy soils, which holds the most available water? | 3.07 | 3.60 | 3.44 | 3.28 |
| What is meant by uniformity of application? | 3.27 | 3.20 | 3.20 | 3.23 |
| How do I use the PET Network information to determine when to water? | 2.93 | 2.80 | 2.90 | 2.90 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

The FAQs identified in the third advanced turfgrass management instructional module (Pests and Integrated Pest Management) maintained some consistency between the second and third rounds of this modified Delphi study (Table 6). "*What common Texas turfgrass diseases might attack my lawn*" moved from third to first most important FAQ in round three; "*What*

*common Texas insects attack lawns*" dropped from first to second most important FAQ in this round. No significant differences were found among respondents' agreement levels of the FAQs identified in the Pests and Integrated Pest Management instructional module. Results in Table 6 are sorted by descending grand means.

Table 6

*Descriptive Statistics: Pests and Integrated Pest Management Instructional Module (n = 30)*

| | *M*[a] | | | |
|---|---|---|---|---|
| FAQs | Agents (*n* = 15) | Coordinators (*n* = 5) | Volunteers (*n* = 10) | Grand (*n* = 30) |
| What common Texas turfgrass diseases might attack my lawn? | 3.60 | 3.60 | 3.80 | 3.67 |
| What common Texas insects attack lawns? | 3.53 | 3.60 | 3.70 | 3.60 |
| How can I determine if I have a disease problem or an insect problem? | 3.53 | 3.60 | 3.60 | 3.57 |
| What is the difference between pre- and post-emergence weed control? | 3.33 | 3.40 | 3.80 | 3.50 |
| How do I control insects in my lawn? | 3.40 | 3.40 | 3.40 | 3.40 |
| Should I use a weed and feed or separate fertilizer and herbicide? | 3.27 | 3.60 | 3.50 | 3.40 |
| How do I prevent disease from attacking my lawn? | 3.27 | 3.40 | 3.50 | 3.37 |
| What is Integrated Pest Management (IPM)? | 3.27 | 3.40 | 3.40 | 3.33 |
| Should I spray my lawn to prevent diseases? | 3.33 | 3.20 | 3.20 | 3.27 |
| What are organic controls for different insects, diseases, and weeds that affect Texas turfgrass? | 3.27 | 3.40 | 3.20 | 3.27 |
| Is weed control in some turfgrasses more of a problem than in others? | 3.27 | 3.20 | 3.20 | 3.23 |
| Lawn bugs, weeds, and diseases overwhelm me; what can I do about these pests? | 3.27 | 3.40 | 2.80 | 3.13 |

*Note*. Four-point, Likert-type scales measured levels of importance. [a]1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree.

## Conclusions/Recommendations

The purpose of this study was to gather stakeholder input for the most Frequently Asked Questions in basic to advanced turfgrass instructional modules for the *Turf for Texans* Master Gardener Program. From the findings, it can be concluded that *lawn health, differences between warm and cool season grasses,* and *turfgrass selection factors* were the most important FAQs to include in the basic turfgrass management curricula. According to our experts, *when to fertilize, frequency of irrigation,* and *lawn diseases* were deemed the most important FAQs for inclusion in the advanced turfgrass curricula.

By focusing efforts on developing the key topics identified by a stakeholder group, curriculum developers can appeal to the needs and wants through a targeted curriculum. One of the first steps in designing adult education curricula is to conduct a needs assessment (Sork & Caffarella, 1989). Knowles, Holton, and Swanson (1998) provided two assumptions about adult learning that are critical in the needs assessment phase. These assumptions are the need to know and the learner's self-concept. Essentially, adults need to know why they need to learn something new. Also, adults will resist and resent (learner's self-concept) situations in which they feel others are imposing their will on them (Knowles, Holton, & Swanson). Such assumptions about adult learning provide important reasons for using stakeholder input during curriculum development.

The topics (FAQs) deemed most important, or critical, by stakeholders should become the key points used to develop the turfgrass management curricula. The FAQs deemed less important could be used as complimentary or supplementary information that is included in the instructional modules, but only as time and space allow. A curriculum development plan based on these observations allows stakeholders or prospective students the opportunity for ownership

of the instructional materials. Through participation in the curriculum development phase, learners come to understand why they need to learn new material and should not resist the material being presented because of their ownership in the curricula. Using this information, curriculum developers can design a turfgrass management curriculum that meets the needs of the targeted clientele.

It is important to remember that respondents who worked most closely with the *Turf for Texans* Master Gardener Program identified and ranked the FAQs for these instructional modules. Additional research that includes input from state extension turfgrass specialists from all southeastern states may further refine the subject matter importance for each instructional module. Also, the preferred delivery formats and comprehension rates of such materials should be investigated with adult learner groups in various (reading skill levels, non-English speaking audiences, etc.) settings.

Although the identified and ranked FAQs for the basic to advanced turfgrass management instructional modules proved useful in developing curricula for the *Turf for Texans* Master Gardener Program, the authors believe the most important finding was derived from the methodology used to gather stakeholder input. The findings revealed that the modified Delphi technique through online data collection techniques could be used to effectively determine stakeholders' needs in designing basic to advanced turfgrass management curricula. Participants were able to incorporate their opinions (round one), value judgments (round two), and agreement levels (round three) in a consensus-building process for the FAQs used in the turfgrass management instructional modules.

Additionally, stakeholder input was gathered in an economical, shortened frame (6.5 weeks), confirming the Web-based surveying methods proposed by Ladner, Wingenbach, and

Raven (2002). The modified Delphi technique used in this study provided consistency in the data collection procedures, as proposed by Somers, Baker, and Isbell (1984). By including stakeholders' input to build consensus on relevant topics for extension programs, extension personnel can focus greater attention on developing relevant educational materials for their clientele. We recommend these methodologies (modified Delphi technique and Web-based data collection procedures) be used by agricultural communications professionals and extension personnel when seeking stakeholder input for instructional materials development.

## References


Branson, Jr., F. F., & Davis, S. M. (1985). How closed circuit TV works for Extension. *Journal of Extension, 23*(1). Retrieved July 17, 2003, from http://www.joe.org/joe/1985spring/a6/html

Debecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning*. Glenview, Illinois: Scott, Foresman and Company.

Dooley, K., Van Laanen, P. G., & Fletcher, R. (1999). Food safety instructor training using distance education. *Journal of Extension, 37*(3). Retrieved September 16, 2003, from http://www.joe.org/joe/1999june/a5.html

Kerlinger, F. N. (1986). *Foundations in behavioral research* (3rd ed). Fort Worth, TX: Holt, Rinehart and Winston, Inc.

Knowles, M., Holton, E., & Swanson, R. (1998). *The adult learner: The definitive classic in adult education and human resource development* (5th ed.). Houston, TX: Gulf Publishing Co.

Ladner, D., Wingenbach, G., & Raven, M. (2002). Internet and paper-based data collection methods in agricultural education research. *Journal of Southern Agricultural Education Research, 52*(1), 40-51.

Ludwig, B. (1997). Predicting the future: Have you considered using the Delphi methodology? *Journal of Extension, 35*(5). Retrieved September 17, 2003, from http://www.joe.org/joe/1997october/tt2.html

Ricketts, J., Hoelscher-Day, S., Begeman, G., & Houtkooper, L. (2001). Interactive distance learning effectively provides winning sports nutrition workshops. *Journal of Extension, 39*(5). Retrieved July 16, 2003, from http://www.joe.org/joe/2001october/a1/html

Rost, B., & VanDerZanden, A. M. (2002). A case study of online learners participating in the Oregon State University Extension Service master gardener training program. *Journal of Applied Communications, 86*(2), 7-16.

Somers, K., Baker, G., & Isbell, C. (1984). How to use the Delphi technique to forecast training needs. *Performance and Instruction Journal, 23*(4), 26-28.

Sork, T. J. and Caffarella, R. (1989). Planning programs for adults. In S. Merriam, and P. Cunningham, (Eds.), *Handbook of adult and continuing education* (pp. 233-245). San Francisco: Jossey-Bass Publishers.

Sunnarborg, K., Bradley, L., & Haynes, D. K. (1988). The TV connection. *Journal of Extension 26*(2). Retrieved September 17, 2003, from http://www.joe.org/joe/1988summer/a2.html

Swistock, B. R., Sharpe, W. E., & Dickison, J. (2001). Educating rural private water system owners in Pennsylvania using satellite versus traditional programs. *Journal of Extension 39*(3). Retrieved September 16, 2003, from http://www.joe.org/joe/2001june/a7.html