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Abstract
In Nigeria, as in many other countries, limited numbers of extension agents (one to 4,000 farmers) make it impossible to reach all farmers by interpersonal means. For this reason, radio and, more recently, television have been used by agricultural organizations to disseminate relevant agricultural information to larger numbers of farm families at minimal cost and to areas hitherto not accessible to extension agents on a regular basis. While prior studies have confirmed that these radio programs have large audiences, there has been less attention to the perceptions farmers hold about the specific benefits these programs proVide. The purpose of this study was to examine the performance of two long-running Nigerian agricultural programs, one for radio and the second for TV, as perceived by 198 randomly selected farmers in Oyo State of southwest Nigeria. Results indicate a very positive assessment of both specific program components and the value of the two programs for improving agricultural production across 12 perceptual dimensions.

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Abstract

In Nigeria, as in many other countries, limited numbers of extension agents (one to 4,000 farmers) make it impossible to reach all farmers by interpersonal means. For this reason, radio and, more recently, television have been used by agricultural organizations to disseminate relevant agricultural information to larger numbers of farm families at minimal cost and to areas hitherto not accessible to extension agents on a regular basis. While prior studies have confirmed that these radio programs have large audiences, there has been less attention to the perceptions farmers hold about the specific benefits these programs provide. The purpose of this study was to examine the performance of two long-running Nigerian agricultural programs, one for radio and the second for TV, as perceived by 198 randomly selected farmers in Oyo State of southwest Nigeria. Results indicate a very positive assessment of both specific program components and the value of the two programs for improving agricultural production across 12 perceptual dimensions.

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Table 4. Pearson Correlations between Respondents’ Assessed and Perceived Biotechnology Knowledge and Selected Demographics ($n = 320$)

| Variables                        | Assessed Knowledge | Perceived Knowledge | Sig. |
|----------------------------------|--------------------|---------------------|------|
| Assessed Knowledge of Biotechnology Issues | 1.00               | 1.00                | 1.00 |
| Perceived Knowledge of Biotechnology Issues | 1.17***            | 1.00                | .00  |
| Summed Scale Scores              | 1.17**             | .90                 | .23**|
| Acceptance of Biotechnology Practices | .97               | .21                 | .05  |
| Importance of Biotechnology      | .97                | .21                 | .05  |
| Effects of Biotechnology          | .97                | .21                 | .05  |
| Family owns agricultural production property | .69                | .29                 | .12  |
| Have lived on a farm or ranch    | .69                | .29                 | .12  |
| Have worked on a farm or ranch   | .11*               | .12                 | .05  |

Note: Four-point Likert-type scales for each section were summarized to determine respondents' overall attitudes toward biotechnology practices. *Acceptance of Biotechnology Practices ranged from 0-5. Effects of Biotechnology ranged from 0-10. Significant at p<0.05. **p<0.01.
using biotechnology in food production, and effects of biotechnology (Table 2).

Future agricultural communicators were somewhat accepting of biotechnology practices for genetically modified organisms involving plant life ($M = 3.28$), but viewed these same practices as somewhat unacceptable for human use ($M = 1.84$). Respondents believed it was important to continue biotechnology research ($M = 3.02-3.53$) and important for journalists to use investigative reporting styles ($M = 2.91-3.33$). In general, students believed that biotechnology practices will have positive effects on fish/wildlife, family farms, healthful foods, and world hunger (Table 2). Respondents estimated the time required for consumers and agriculturists to accept using government approved biotechnology in food production. Students estimated agriculturists will take 3 to 5 years to accept government-approved biotechnology practices, but consumers will take twice as long (6 to 10 years) (Table 3).

| Item                                                        | f     | Percent |
|--------------------------------------------------------------|-------|---------|
| Estimated time it will take the average farmer to accept U.S. Government (EPA, FDA, and USDA) approved biotechnology as an acceptable farm practice. |       |         |
| 3-5 years                                                    | 96    | 29.1    |
| 6-10 years                                                   | 95    | 28.8    |
| > 10 years                                                   | 65    | 19.7    |
| 0-2 years                                                    | 56    | 17.0    |
| Never                                                       | 12    | 3.6     |

| Item                                                        | f     | Percent |
|--------------------------------------------------------------|-------|---------|
| Estimated time it will take the average consumer to accept U.S. Government (EPA, FDA, and USDA) approved biotechnology as an acceptable farm practice. |       |         |
| 6-10 years                                                   | 111   | 33.6    |
| 3-5 years                                                    | 102   | 30.9    |
| > 10 years                                                   | 56    | 17.0    |
| 0-2 years                                                    | 39    | 11.8    |
| Never                                                       | 16    | 4.8     |

Nearly two thirds of the respondents listen to both programs. Even though radio is currently utilized more than television by most farmers, they perceive that the television program is providing very useful content.

Background and Introduction

In Nigeria, as in many other countries, limited numbers of extension agents (one to 4,000 farmers) make it impossible to reach all farmers by interpersonal means. Thus, although there have been a number of documented project successes in which extension agents have personally delivered useful research-based information (Akinpelu, 1987), mass media alternatives to reaching large numbers of farmers are an essential supplement.

Both radio and television have been successfully used in agricultural extension in many countries (Ogunmilade, 1984). Evidence from previous research indicates that people's attitudes and perceptions may be influenced by their media use (Anigwe, 1990; Olowu, 1993; Yahaya and Akinboye, 1999; and Yahaya and Omokhaye, 2001). In an earlier study conducted in Southwest Nigeria, Patel and Ekpere (1978) reported that 83 percent of the farmers listen to radio farm programs. Similarly, Olowu and Igodan (1989) reported that farmers generally obtain information from the radio, and of about 34 percent of the farmers who sought information from the radio, 31 percent actually obtained useful information from it. These researchers also discovered that farmers' educational level was significantly related to the media from which they sought specific information, particularly information on marketing, pesticides and herbicides. Age of farmers also was significantly related to the media that farmers used to find information on improved technologies. In another study, Olowu (1991) found that the viewing of agricultural television programs is significantly and positively related to knowledge of improved farm practices.

Because of their popularity and ability to reach farmers, radio and, more recently, television have been used by agricultural organizations in Nigeria to disseminate relevant agricultural information to larger numbers of farm families at minimal
cost and to areas previously not accessible to extension agents on a regular basis. While prior studies have confirmed that these radio programs have large audiences, there has been less attention to the perceptions farmers hold about the specific benefits these programs provide.

This study examined how farmers perceive the information benefits of two long-running agricultural programs on two electronic media channels (radio and television) in selected communities in Southwest Nigeria. The radio program is *AgbeJoba* (Farmers Are Kings), and the TV program is *Ejekaroko* (Let’s Go Farming). These two programs are transmitted by Broadcasting Corporation of Oyo State (BCOS) radio and television stations. Both programs are broadcast weekly in the Yoruba Language on Thursdays from 6.35 p.m. to 7 p.m. (*AgbeJoba*) and on Tuesdays between 5.30 p.m. and 6 p.m. (*Ejekaroko*). The two programs have been part of the corporation’s programs since its inception. The forerunner of *AgbeJoba* was *Agbe Mase* (I Will Take to Farming), which was broadcast by the Western Nigeria Broadcasting Corporation (WNBC) in 1957. Some 23 years later in 1979, the television broadcast of *Ere Agbe* (The Gains of Farming) was broadcast on Western Nigeria Television Station (WNTV) (*WNTV, 1979*). This program would later be named *Ejekaroko*. In addition to carrying agricultural advertising, the two programs convey directly research-based agricultural recommendations using researchers, extension personnel and farmers themselves.

**Purpose and objectives**

The purpose of this study was to investigate farmers’ perceptions of the informative values of *AgbeJoba* and *Ejekaroko* agricultural programs broadcast on radio and television. The specific objectives of the study were as follows:

1. To determine if the two programs actually reach the farmers in the study location where the reception of two media channels is excellent;
2. To examine farmers’ perceptions of the informative roles of the two programs across 12 dimensions (discussed later);
3. To determine the relationship between farmers’ demographic characteristics (age, gender, educational

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**Table 2. Descriptive Statistics for Attitudes toward Biotechnology Issues**

| Variables                        | M  | SD |
|----------------------------------|----|----|
| Acceptance levels for genetically modified organisms involving* | 3.28 | .79 |
| Forests/landscape plants         | 3.28 | .78 |
| Food crops                       | 3.28 | .76 |
| Microorganisms                   | 3.07 | .79 |
| Animals                          | 2.60 | .90 |
| Humans                           | 1.84 | .98 |
| Acceptance levels of biotechnology practices involving*         | 3.41 | .74 |
| Insect-resistant cotton           | 3.36 | .77 |
| Insect-resistant corn             | 3.34 | .76 |
| Slow vine-ripening tomatoes      | 3.33 | .77 |
| Herbicide-resistant soybeans      | 3.33 | .77 |
| Importance levels placed on biotechnology research to*         | 3.53 | .64 |
| Benefits to the environment      | 3.47 | .73 |
| Harming the environment          | 3.44 | .69 |
| Safer food                       | 3.23 | .74 |
| Risk compared to pesticides      | 3.13 | .78 |
| Reduction of pesticides          | 3.10 | .73 |
| Added nutritional value          | 3.02 | .82 |
| Control of released genes         | 3.02 | .82 |
| Importance levels for journalists to*       | 3.33 | .76 |
| Investigate claims and statements made by government agencies   | 3.28 | .74 |
| Investigate claims and statements made by food companies        | 3.24 | .75 |
| Investigate claims and statements made by biotech companies     | 3.18 | .83 |
| Provide analysis and interpretation about the                      | 3.23 | .84 |
| undesirable consequences of biotechnology                         | 3.17 | .77 |
| Provide analysis and interpretation about the                      | 3.17 | .77 |
| desirable consequences of biotechnology                          | 2.94 | .98 |
| Investigate claims and statements made by                        | 3.34 | .58 |
| university scientists                                                  | 3.07 | .64 |
| Investigate claims and statements made by                        | 2.78 | .85 |
| activist groups                                                      | 2.74 | .67 |

Note: Four-point, Likert-type scales were used throughout each section measuring students’ attitudes. *1 = Highly Unacceptable, 2 = Somewhat Unacceptable, 3 = Somewhat Acceptable, 4 = Highly Acceptable. b 1 = Not at all Important, 2 = Somewhat Important, 3 = Important, 4 = Extremely Important. c 1 = Very Negative, 2 = Negative, 3 = Positive, 4 = Very Positive.
status, leadership status and marital status) and perception of the two programs; and

4. To make recommendations, based on findings, to extension, media producers/presenters and practitioners on how to fulfill farmers' media program expectations for agricultural radio and television programs.

Method

The study was conducted in two local government areas of Oyo State in Southwest Nigeria. The area is made up of Akinyele and Ibadan South West Local Government Areas. The choice of Akinyele and Ibadan South West Local Government Areas was made because it has a typical representation of the region as a whole, including both urban and rural settlements. In addition, this area has excellent reception of programs of Broadcasting Corporation of Oyo State (BCOS).

The target population consisted of all farmers in the two local government areas identified above. A random sampling procedure was adopted during the selection of 200 respondents from the entire study area. This is about 15 percent of the farmers on the list of the Extension Officers in the Agricultural Development Project sampled cells. Extension agents compile these lists as a part of their duties, and determine who are primarily farmers. In this study, the list of farmers in sampled villages/wards was obtained from the Extension agent, and then a random sample of these individuals was selected. Questionnaires were administered to the respondents in their homes in person after the day's work between June and August 2001.

One hundred ninety-eight of the 200 farmers selected completed usable questionnaires. This high response rate was achieved because the interviews were conducted by a team of postgraduate research assistants and this author, who personally sat with the farmers and asked questions directly from the questionnaire, filling out answers directly to avoid misinterpretation and inaccurate responses. Twelve farmers, whose educational attainment was sufficient to permit them to read and complete the questionnaires on their own, were permitted to read and respond to the questions on their own. Two of these 12 did not return their questionnaires, leading to the response rate of 198 out of 200.

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Table 1. Demographic Frequencies of Respondents (N = 330)

| Variables                        | f   | Percent |
|----------------------------------|-----|---------|
| University:                      |     |         |
| Clemson University              | 81  | 24.5    |
| Oklahoma State University       | 73  | 22.1    |
| Texas A&M University            | 61  | 18.5    |
| Michigan State University       | 41  | 12.4    |
| Western Illinois University     | 23  | 7.0     |
| University of Arkansas          | 16  | 4.8     |
| University of Florida           | 12  | 3.6     |
| North Carolina State University | 11  | 3.3     |
| Kansas State University         | 5   | 1.5     |
| Washington State University     | 5   | 1.5     |
| Texas Tech University           | 2   | 0.6     |
| Major:                          |     |         |
| Agricultural Education          | 79  | 23.9    |
| Other College of Agriculture    | 78  | 23.6    |
| Agricultural Communications     | 6   | 20.0    |
| Liberal Arts                    | 52  | 15.8    |
| Animal Science                  | 29  | 8.8     |
| Health-related Fields           | 18  | 5.5     |
| Undecided                       | 3   | 0.9     |
| Class Status:                   |     |         |
| Senior                          | 152 | 46.1    |
| Freshman                        | 79  | 23.9    |
| Junior                          | 56  | 17.0    |
| Sophomore                       | 25  | 7.6     |
| Other                           | 10  | 3.0     |
| Gender:                         |     |         |
| Female                          | 181 | 54.8    |
| Male                            | 140 | 42.4    |
| Overall Grade Point Average:    |     |         |
| 3.00-3.99                       | 198 | 60.0    |
| 2.00-2.99                       | 105 | 31.8    |
| 4.00                            | 16  | 4.8     |
| 1.00-1.99                       | 3   | 0.9     |
| < 1.00                          | 1   | 0.3     |
Measurement of variables

Farmers were asked a series of demographic questions, questions about their listening and viewing of the two programs, and a series of 12 items measuring their perceptions of the programs.

a) Demographic questions: Farmers were asked to indicate their social and personal data, which they readily provided, including age, gender, marital status, leadership status, educational attainment and media listening and or viewing patterns. This included access to the two radio programs as well as their listening patterns to these two programs.

b) Listening/viewing questions: Farmers were asked to indicate whether they listen to either the radio program or the TV program, and if so, how often they listen to it.

c) Perceptions of program value: Farmers responded to 12 statements, half positively worded, and half negatively worded, about the value of the programs. They were asked to respond to each item using a five-point Likert scale with the following ratings: strongly agree, five points; agree, four points; undecided or neutral, three points; disagree, two points and strongly disagree, one point. A maximum score of 60 points was possible, and a minimum score of 12 points. Negatively worded items were reversed before summing the score. At the end, overall perception scores were categorized into “favorable” (30-60 points) and “unfavorable” (less than 30 points).

Results

Results provided in Table 1 show various social and personal characteristics of the respondents. Findings reveal that the majority of respondents are male (80%) and older than 30 years of age (84%). This finding is consistent with previous studies that focused on farmers in Nigeria, which revealed that agriculture is predominantly left in the hands of older farmers. The majority of the respondents are Christians (43%), followed by Muslims (36%) and traditionalists (16%).

Findings also reveal that more than one third of the farmers’ educational attainment is informal education (36%). More than

Respondents were instructed to read and agree to an Informed Consent Form before entering the survey site.

Descriptive statistics were derived for each section and the instrument as a whole. Demographic data were analyzed using percentages and frequencies. Significant relationships between selected variables were established using bivariate analyses.

Results

Usable responses (N = 330) were gathered from college of agriculture students at 11 universities in 10 states representing six programs of study. Specific areas of self-reported majors included those in agricultural education, other college of agriculture (poultry, forestry, and food sciences, and agribusiness/agricultural economics), agricultural communications, liberal arts (journalism, math, economics, education, and business) animal science, and health-related fields (nursing, pharmacy, and rehabilitation science). Respondents were mostly seniors (46%), female (55%), and considered themselves “B” average students (60%) from their self-reported overall grade point averages (Table 1).

Students’ knowledge of biotechnology issues reported in the mass media was assessed using nine multiple-choice questions. The research design did not preclude students from using the Internet to search for answers they did not know, and one could expect unknowledgeable respondents to score 25% correct for questions with four possible choices. However, respondents in this study achieved only 30% correct responses (M = 3.05, SD = 1.51). This lack of knowledge about biotechnology practices mirrors the findings of Vestal and Briers (1999) and Bruhn (as cited in Vestal & Briers, 1999). Nearly 84% of the respondents perceived their level of scientific knowledge as average to high (M = 3.07, SD = .74). Of those respondents, 24% believed they had “above-average” scientific knowledge. Again, these findings match those found by Vestal and Briers, where metro news journalists perceived a higher level of scientific knowledge than they actually possessed.

College of agriculture students responded to 28 questions designed to assess their attitudes toward biotechnology issues. These questions were contained in scales measuring acceptance of biotechnology practices, importance of biotechnology, faith in biotechnology information sources, potential barriers to
(Kansas State, Texas Tech, and Texas A&M) who were not a part of this study.

The instrument contained 70 questions measuring students' knowledge, attitudes and perceptions toward biotechnology issues as reported in the mass media. These constructs were quantified through response sets in seven scales that included 1) knowledge of biotechnology; 2) acceptance of genetically modified organisms; 3) acceptance of biotechnology practices; 4) levels of importance placed on biotechnology research; 5) levels of importance placed on investigative reporting styles of biotechnology issues; 6) attitudes toward effects of biotechnology on selected issues; and 7) perceptions about the acceptance rates (consumers and agriculturists) of using government-approved biotechnology practices in food production.

Students' knowledge about biotechnology issues was measured using nine multiple-choice questions. Attitudes and perceptions were measured using four-point, modified Likert-type scales. Responses to the scale measuring acceptance of biotechnology practices could range from Highly Unacceptable (1) to Highly Acceptable (4). Vestal and Briers (1999) reported a Cronbach’s alpha coefficient of .87 for the acceptance scale; Cronbach’s alpha was .91 for the same scale in this study. Additional reliability analyses for scales not reported in the study by Vestal and Briers, but conducted in this study revealed Cronbach’s alpha coefficients of .90 for the scales (1 = Not at all important, 4 = Extremely Important) measuring importance of investigative reporting and .85 for importance of biotechnology research. Scales measuring faith in biotechnology information sources (.73) and attitudes toward effects of biotechnology (.70) were deemed reliable. The researchers concluded that the scales used in this study provided reliable data for analyses and interpretation.

Pre-notice e-mail and listserv announcements describing the study were sent to land-grant university faculty members in early August 2002. Colleagues were asked to review the online instrument, provide clarification where necessary, and encourage undergraduates to participate in the study. Data collection began in mid-August with biweekly e-mail reminders to faculty members, and was completed in seven weeks. Respondents accessed the instrument through a closed Web address.

two thirds (68%) of the respondents consider themselves community or social leaders, while nearly one third (31.8 %) are members of village council or associations. Their status in the community suggests that they might play an important role in diffusing information to others in their community. A majority (72%) of the respondents is married.

![Table 1. Distribution of respondents' social and personal characteristics (n = 198)](https://newprairiepress.org/jac/vol86/iss3/2)

| Characteristics                     | Frequency | Percentages (%) |
|-------------------------------------|-----------|-----------------|
| Gender:                             |           |                 |
| Males                               | 159       | 80.3            |
| Female                              | 39        | 19.7            |
| Age (Years):                        |           |                 |
| Young farmers (less than 30 years)  | 31        | 15.7            |
| Older farmers (31 years and above)  | 167       | 84.3            |
| Religion:                           |           |                 |
| Islam                               | 71        | 35.9            |
| Christianity                        | 85        | 42.9            |
| Traditional                         | 32        | 16.2            |
| Others                              | 10        | 5.0             |
| Educational status:                 |           |                 |
| Informal                            | 72        | 36.4            |
| Primary                             | 52        | 26.6            |
| Secondary                           | 59        | 29.8            |
| Tertiary                            | 10        | 5.0             |
| None                                | 5         | 2.5             |
| Leadership status:                  |           |                 |
| Community/social leader             | 135       | 68.2            |
| Council/Association member          | 63        | 31.8            |
| Marital status:                     |           |                 |
| Single                              | 56        | 28.3            |
| Married                             | 142       | 71.7            |
Table 2. Distribution of respondents’ listening and viewing patterns to “Agbeloba” and “Ejekaroko” programs (n = 198)

| Programs                                      | Frequency | Percentage |
|-----------------------------------------------|-----------|------------|
| **Listening/viewing pattern to Agbeloba and Ejekaroko** |           |            |
| Agbeloba only                                 | 43        | 21.7       |
| Ejekaroko only                                | 15        | 7.6        |
| Agbeloba and Ejekaroko                        | 126       | 63.6       |
| None                                          | 14        | 7.1        |
| **Listening pattern to Agbeloba**             |           |            |
| Weekly                                        | 89        | 44.9       |
| Fortnightly                                   | 60        | 30.3       |
| Monthly                                       | 19        | 9.5        |
| None                                          | 30        | 15.2       |
| **Viewing pattern of Ejekaroko**              |           |            |
| Weekly                                        | 59        | 29.8       |
| Fortnightly                                   | 42        | 21.2       |
| Monthly                                       | 44        | 22.2       |
| None                                          | 53        | 26.8       |

Areas of interest in the two programs. Numbers and percent of farmers who select the extent to which one of these formats is most effective in "generating their interest" in the programs.

| Areas of interest                                      | Number | Percentage |
|--------------------------------------------------------|--------|------------|
| Advertisement                                          | 25     | 12.6       |
| Presentation format                                    | 61     | 30.8       |
| Relevant information                                   | 81     | 40.9       |
| Others                                                 | 9      | 4.5        |
| Not indicated                                          | 22     | 11.1       |

2. Determine students' attitudes toward biotechnology issues.

3. Determine if relationships exist between students' assessed and perceived levels of biotechnology knowledge and their perceptions toward biotechnology issues.

4. Determine if relationships exist between students' assessed and perceived levels of biotechnology knowledge and selected demographics.

Methods

Descriptive methodology and a correlational design were used to complete the 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 (#2002-381).

The self-selected population for this census study consisted of undergraduate students majoring in agricultural communications, enrolled in agricultural communications courses, and/or participating in the Agricultural Communicators of Tomorrow organization (N = 343). Total responses numbered 343; however, incomplete data reduced the usable number of respondents to 330 (96.21%). Valid responses were gathered from students at Clemson University, Oklahoma State University, Texas A&M University, Michigan State University, Western Illinois University, University of Arkansas, University of Florida, North Carolina State University, Kansas State University, Washington State University, and Texas Tech University. Results of this study should not be generalized beyond the confines of the respondent group.

A modified version of the instrument, *Metro News Journalists' Perceptions of Food Biotechnology* (Vestal & Briers, 1999) was derived from research based on the work of Duhe (1993), Barton (1992), and the *North Carolina Nationwide Survey on Biotechnology* (as cited in Vestal & Briers, 1999). Content validity was established by a panel of experts from the University of Arkansas, University of Florida, Kansas State University, Michigan State University, and the University of Kentucky. Face validity was established through a pilot study of students.
Hart (1998) surveyed 2,000 journalists and 2,000 scientists to determine how the two groups felt about each other. Neither group believed the media was doing a good job of explaining science to the public. The authors suggested that both groups would benefit from more skills training—scientists need more communications skills, and journalists need more science skills (Chappell & Hart, 1998). Helping college students acquire skills in communications and science is critical to educating the public on biotechnology.

Vestal and Briers' (1999) study of 88 journalists representing 85 of the nation's largest metropolitan newspapers found that journalists' knowledge of food biotechnology was relatively low. Of the study's respondents, 92% indicated that they were "aware" or "somewhat aware" of how biotechnology affects their food, health, and environment. Respondents' attitudes toward food biotechnology indicated that the group believed genetic modification of humans was the least acceptable use of biotechnology, followed by genetic modification of animals as "highly" or "somewhat unacceptable." Statistically significant relationships existed between journalists' beliefs about the effects of biotechnology, their family's relationship to agriculture, and their perceived level of biotechnology knowledge. Journalists whose families owned agricultural land or who had a high perceived knowledge about biotechnology tended to believe that biotechnology we would have more positive than negative effects. The study also identified a gap between the journalists' actual knowledge (30% correct responses) about food biotechnology and their perceived knowledge (average to high knowledge). How do these relationships and lack of biotechnology knowledge among media professionals compare to the knowledge and perceptions of college of agriculture students?

Purpose and Objectives

The purpose was to determine college of agriculture students' knowledge and perceptions of biotechnology issues reported in the mass media. The objectives guiding this inquiry were to:

1. Assess students' knowledge of biotechnology issues reported in the mass media.

Listening and Viewing Patterns

As shown in Table 2, the majority of the farmers who listen to the radio program Agbeloba also watch the TV program Ejekaroko (64%), while most of the remainder listen to Agbeloba alone (22%). Only 7.1% percent do not attend to either of the two programs (7.1%). Agbeloba enjoys a large regular audience, with 45 percent saying they listen every week and another 30 percent stating they listen every other week. The TV program Ejekaroko has a smaller regular audience, with about 30 percent saying they watch every week and 21 percent every other week. These are still very substantial numbers when considering the total population of farmers in the region. Results show that almost 93 percent of farmers listen to or view one of these programs at least monthly.

Respondents were asked to select what program approach was most effective in generating their interest. Three choice areas were presented, as follows:

- Advertisement: Messages included in programs that call for farmer patronage e.g., agrochemical sales and efficacy
- Presentation format: Program formats such as discussion, question and answer, and field trips to show case studies of the issues under focus.
- Relevant information: Perceived relevancy of content. That is, respondents' interests are maintained due to relevant information obtained from the two programs.

- Other: Program approaches that generate interest, other than those above.

Results showed that farmers responded most positively to relevant information that they could apply to their own farming (41%), while another third chose interviews and discussions to be most effective in generating their interest. Only 12 percent selected advertising. Twenty-two percent did not select any of the three as being effective in generating their interest.

Farmers also were asked to make an overall assessment of their perceived need for these programs to improve their farming enterprises. A large majority (96%) indicated a perceived need for the programs.
Perceptions of the Informative Value of the Programs

Each farmer was asked to rate the two programs across 12 dimensions. Half of the items were negatively worded and the other half positively worded. As shown in Table 3, items 1 and 6 focused only on perceptions about the radio program Agbeloba. Items 2 and 5 focused only on perceptions about the TV program Ejekaroko. The other items asked farmers to provide perceptions about both programs. Results show that the two programs are highly valued across all 12 dimensions, with an overall mean of 4.81 (out of a maximum of 5.0) for the 12 items (with negative item scoring reversed). Advertising (Item 10) was least valued, but even it received a relatively high score. Almost 60 percent strongly disagreed that advertising interfered with program content and understanding. The use of musical interludes (Item 9), which is common across agricultural programs, was also positively evaluated. Item 7, which concerns religious differences, demonstrates that despite religious unrest in Nigeria, at least in farming it is perceived that a farmer of any religious orientation can benefit from these programs. Despite the fact that one quarter of farmers do not view the TV program regularly, they perceive that it is quite valuable as a source of information. Thus, it is likely that access to television, or other barriers not addressed in this study, may be restricting viewership rather than any negative judgment about content. Measures of perception of information quality and its ability to teach new farming techniques indicate high agreement that the programs are beneficial to farmers.

Analysis was also conducted to assess whether perceptions of value for the two programs varied by gender, age, education or leadership status. Results showed that positive assessments of the two programs were not influenced by these demographic characteristics. In all of the demographic classifications considered (male/female; age less than 30/age greater than 30, etc.), more than 90 percent of the respondents gave an overall favorable rating for the two programs.
somewhat unacceptable for use on humans (M = 1.84). Significant, low positive relationships existed between respondents' perceived and assessed levels of biotechnology knowledge (r = .17) and between their assessed knowledge and acceptance of biotechnology practices (r = .16). Selected college students in the agricultural sciences have much less knowledge about biotechnology practices than what they believed to possess. Although correctable through increased study of biotechnology, this finding may pose serious problems for students choosing to "communicate" the science of biotechnology issues in the mass media. Agricultural communications faculty nationwide should analyze their curricula to determine if students are being given the opportunity to study biotechnology issues while learning how to communicate it to a larger audience.

**Introduction**

Biotechnology is a hot topic in the media. However, agricultural communicators often struggle to translate information from scientists about biotechnological breakthroughs into terms the public can understand. This struggle, which may be seen as an information and education gap, may be caused by communicators' lack of understanding the "technical" science behind biotechnology issues, or the public's lack of scientific knowledge in general. The results of this struggle are frequently disappointing for communicators and scientists. Communications researchers, media critics, communicators, and scientists encourage improved education in this area. But whom do we educate and when? College of agriculture students who will be future agricultural communicators and scientists are an obvious audience.

**Theoretical Framework**

The study of biotechnology and public perceptions is not new, nor is the controversy about biotechnology. As early as 1989, Hoban noted the potential importance of biotechnology, and the importance of communication channels in educating...
In further analysis, chi-square testing showed that there is no significant relationship between farmers' perception of the informative role of a program and the program type ($X^2 = 0.043; P>0.05$). This implies that TV was perceived just as positively in terms of overall value as radio. Hence, either of the programs can be effectively used to disseminate agricultural information to farmers. Since the audience largely overlaps, and since radio as a medium is cheaper to produce, it should continue to receive emphasis. However, results show that many farmers are also watching the TV program.

Conclusions and Recommendations

The study was designed to investigate farmers' perceptions of the informative roles of Agbeloba radio and Ejekaroko TV programs transmitted by the Broadcasting Corporation of Oyo State. Results show that farmers do receive these programs on their radio and television, and that they perceive that both of the programs have substantial value in terms of relevant agricultural information. These positive results hold across demographic groups (age, marital status, etc.) although there is slightly less satisfaction by those in the lowest educational group. Therefore, it is suggested that the information and presentation components of the two programs be maintained.

Since audience members also rated advertising positively, more effort should be made to recruit additional advertising for the program. Advertising offers substantial opportunities for generating additional needed funding for the programs, and as long as it does not interfere with program benefits, it should be encouraged.

Finally, research should also continue to investigate or assess agricultural programs on various media channels in Nigeria and other developing countries to ensure that information dissemination is not hindered. Such assessment should be based on message content and farmers' utilization for income generation and subsequent household food security and poverty reduction.
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