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# **Agricultural and Natural Resources Awareness Programming: Barriers and Benefits as Perceived by County Extension Agents**

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**Abstract:** The study described here assessed Extension agents' perceived barriers and benefits concerning a new Florida agricultural and natural resources awareness initiative and Web site. A total of 186 agents responded to a statewide Web-based needs assessment, for an overall response rate of 58%. Results highlighted several barriers to communicating about agriculture and natural resources, including (a) a lack of interest, knowledge, and awareness among the general public, government, clientele, and media, (b) a lack of agent access to resources/contacts, and (c) inconsistent/ineffective message delivery methods. Concerning the Web site, most respondents wanted information to be presented via fact sheets, economic facts, and downloadable brochures.

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## Introduction

Change is hard. Given the diverse needs to which the Cooperative Extension Service responds, initiating change within this system is especially difficult. According to Burke (2002), organizations such as Extension are created and developed with an assumption of continuity, but their external environment is in a constant state of flux. This helps explain the difficulties in fostering large-scale change within Extension, despite an increase in the Extension literature advocating the need for such change (Bull, Cote, Warner, & McKinnie, 2004; Ray, 2007). In fact, some have suggested that unless Extension better markets its ability to respond to the changing needs of society, its efforts may no longer be needed (McDowell, 2004).

Behavior change theories, including Ajzen's (1991) Theory of Planned Behavior, McKenzie-Mohr and Smith's (1999) Community-Based Social Marketing, and Rogers's (2003) Diffusion of Innovations Theory, provide frameworks for measuring/increasing the likelihood that change will occur. However, prior to applying these theories, barrier-benefit research is necessary (McKenzie-Mohr & Smith, 1999). Lewin (1951) and, more recently, Burke (2002) argued that in an attempt to understand and better stimulate behavior change, an identification of individual and organizational barriers and opportunities is vital. A proactive assessment of the barriers and benefits associated with a new initiative, as perceived by the target audience, can increase the likelihood of program success (McKenzie-Mohr & Smith, 1999).

With respect to behavior change in Extension, barriers to engaging in a new program/initiative and barriers to agent outreach efforts that promote behavior change have been identified. Concerning barriers to engaging in a new program/initiative, a qualitative case study with key Florida Extension leaders found that Florida Extension agents: (a) faced information overload and (b) experienced a lack of incentives for engaging in new programs/initiatives and had a lack of knowledge that such incentives existed (Brain & Fuhrman, 2007).

Regarding barriers to outreach efforts, Extension agents were perceived to have an unclear sense of what they were expected to accomplish and their communication efforts with the public were often inconsistent (Brain & Fuhrman, 2007; Haug, 1999). McDowell (2004) stated that inconsistency lay not only in outreach efforts between Extension agents and the general public, but also between academic departments and Extension agents. A lack of targeted information has also been identified as a considerable barrier to fostering sustainable behavior change via Extension outreach efforts (McDowell, 2004; Schultz, 2002).

In addition to the aforementioned barriers, several authors have suggested opportunities for meeting the changing needs of society that Extension ought to embrace. A recurring theme among recommended opportunities is technology adoption. For example, Bull et al. (2004) discussed the need for Extension to continue communicating through evolving and multiple learning contexts, including technology, to meet the changing needs of diverse target audiences. King and Boehlje (2000) advocated the use of technology in their push for the development of a new virtual Extension Service (e-CES). The Extension Committee on Organization and Policy (ECOP) provided similar recommendations for developing such technologies in *The Extension System: A Vision for the 21st Century* (2002). Since the ECOP report, several articles in *JOE* have advocated the use of Web-based Extension products, such as eXtension, but the acceptance and adoption of a Web-based approach has been slow (Ray, 2007).

Given the slow adoption rate of a Web-based approach in Extension, identification of (a) preferred formats for online information and (b) barriers in outreach efforts related to Web-based program content may increase the likelihood of program success. In Florida, Brain and Fuhrman (2007) discussed the potential of Web site technology to centralize Extension's efforts as seen through the eyes of key Florida Extension leaders. However, the perspectives of those who experience the day-to-day operations of Extension must also be examined. Implementing change based solely on a leadership perspective is not advocated as a best practice (Burke, 2002). Thus, when asking agents to change and adopt new initiatives/technologies, accurate

diagnosis of potential barriers and benefits is difficult without asking agents themselves.

Assessing agent perspectives can enhance the likelihood of new initiative/technology adoption. According to adult learning theory, involving adults in planning relevant programs fosters an atmosphere of ownership and self-directedness. Birkenholz (1999) stated that, "adults who participate in the planning process generally develop a vested interest and will work more diligently to achieve program success" (p. 58). In an earlier study, Knowles (1980) claimed that adults should participate in the planning, implementation, and evaluation of programs to maximize their learning experience. One way to effectively involve adults is through a needs assessment. In program development, needs assessments provide a systematic process for determining the gap between "what is" and "what should be" (Seevers, Graham, Gamon, & Conklin, 1997; Witkin, 1984).

## **Purpose/Research Questions**

Following Knowles (1980) and Birkenholz's (1999) advice, the purpose of the study described here was to assess perceived barriers and benefits of Florida Extension agents concerning a new Florida agricultural and natural resources (AGNR) awareness initiative and Web site. The initiative is a train-the-trainer approach, targeted at Extension agents, with the goal of educating the wider population about the importance of Florida's AGNR industry.

To assess perceived barriers and benefits, a statewide needs assessment was conducted with Florida Extension agents. The needs assessment stemmed from Brain and Fuhrman's (2007) qualitative case study with key Florida Extension leaders. In particular, the following research questions (as perceived by Florida Extension agents) guided the study.

1. What barriers exist in Florida Extension with regards to AGNR awareness outreach efforts?
2. If a comprehensive AGNR awareness Web site were created, (a) how likely would agents be to use the Web site, and (b) what features should the Web site have?

## **Methods/Procedures**

The AGNR awareness needs assessment instrument was developed by (a) reviewing the literature, (b) gaining input from the AGNR awareness taskforce, and (c) reviewing the results of three in-depth interviews with key Florida Extension leaders, including the Associate Dean of 4-H youth development programs, the Associate Dean of agricultural programs, and the Dean and Director of Extension (Brain & Fuhrman, 2007). A panel of eight experts consisting of faculty and graduate students in the Department of Agricultural Education and Communication and the Department of Food and Resource Economics judged the finalized instrument for face and content validity, and minor revisions were made (Ary, Jacobs, Razavieh, & Sorensen, 2006).

A descriptive survey research design was used via a Web-based questionnaire. Twenty-eight questions were included in the instrument, 14 closed-ended and 14 open-ended. Dillman's (2007) conventions for developing questionnaires to minimize measurement error were followed. Closed-ended questions contained response options ranging from 5-point Likert-type scales to yes/no. As a way to examine validity, open-ended questions were similar to many closed-ended questions but attempted to elicit more detailed qualitative responses from participants. Comparison in responses to similar closed and open-ended questions demonstrated construct validity and reliability.

Closed-ended questions requiring quantitative responses were analyzed using descriptive statistics, including frequencies, means, and standard deviations in SPSS Version 14.0. Open-ended questions requiring written responses were coded via domain analysis, a qualitative data analysis technique (Coffey & Atkinson, 1996). The domain analysis involved a four-pronged process of open coding, systematic color coding, frequency counts of color codes, and merging of final codes into overarching domains. Extracted themes for each open-ended question were tallied and then peer-reviewed by the AGNR awareness faculty team to ensure credibility and confirmability (Ely, Anzul, Friedman, Garner, & Steinmetz, 1991; Hatch, 2002).

## Results/Findings

The study involved census sampling methods. All 321 Extension agents in Florida listed by the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) directory received the needs assessment electronically via Survey Monkey©. A Web-based survey administration approach was deemed as the most effective method to reach this population due to its successful use in studies within Florida Extension (Telg, Irani, Muegge, Kistler, & Place, 2007). Internet survey use in social sciences has increased in recent years and has been found to produce similar results to those from telephone surveys in attitudinal and behavioral intention research (Berrens, Bohara, Jenkins-Smith, Silva, & Weimer, 2003; Dillman, 2007).

The survey was administered on September 5, 2006, and closed on September 29, 2006 after two reminder notices were sent to non-respondents, following Dillman's (2007) tailored design method. A total of 186 agents (58% response rate) completed the survey. Early and late respondents were compared to determine if any statistical difference existed (Lindner, Murphy, & Briers, 2001). Statistical analysis of closed-ended questions confirmed no significant differences existed between early (the first 25%) and late respondents (the last 25%).

Respondents represented 53 of the 67 Florida counties. The mean overall experience agents had in working with Extension was 12 years (*SD* = 9 years), and the mode was 5 years. The minimum amount of experience respondents had was 0.5 years, and the maximum was 35 years.

When asked to list their highest level of education attained, the majority (*n* = 87; 69%) identified having a Master's degree, 23 (18%) had a Bachelor's degree, and 17 (13%) had a Doctoral degree. In addition to education level, agents were asked to list their primary area of expertise. Table 1 illustrates that most agents' primary area of expertise was either in agriculture or 4-H. Primary areas of expertise in the "other" category of Table 1 included commercial, urban and environmental horticulture, animal science, and urban forestry.

**Table 1.**  
Extension Agent by Primary Area of Expertise

Expertise	<i>f</i>	%
Agriculture	37	29
4-H	24	19
Urban horticulture	18	14
Family youth and community sciences	16	13
Natural resources	9	7
Sea Grant	4	3

Community development	2	2
Other	16	13
Total	126	100
Note. <i>N</i> = 126. Sixty respondents did not reply to this question.		

### Research Question #1: Barriers Concerning AGNR Awareness Outreach Efforts

In examining key barriers facing Florida Extension agents regarding AGNR awareness outreach efforts, it was necessary to first assess the perceived level of interest the Florida public had regarding various AGNR-related issues. This was done using nine subject areas related to AGNR, each with a five-point Likert-type scale ranging from "not interested" to "very interested." The majority (percentage noted in parentheses) indicated that the public was "interested" or "very interested" in the following five subject areas: property rights (*n* = 136, 78%), water use (*n* = 136, 76%), disaster response (*n* = 127, 71%), ground water contamination (*n* = 119, 68%), and development pressures on land used for agriculture (*n* = 120, 67%).

Next, agents were asked in an open-ended manner to list the most important AGNR-related challenge currently facing their specific counties. Of the 157 agents who responded, the most frequently listed challenge was "development/population increase," directly mentioned by 91 agents (58% of all responses). Domain analysis revealed five major domains, many of which were either directly or indirectly related to population pressures in the state (Table 2).

**Table 2.**  
Most Important AGNR-Related Challenges Facing Counties in Florida

Listed Challenges	<i>f</i>	%
Development/population increase	91	58
Water use/quality and other environmental issues resulting from population increase	67	43
Land value and money issues, such as taxation	25	16
Government policy and property rights	14	9
Rural-urban interface	10	6
Note. <i>N</i> = 157. Total percentage sums to over 100% because many respondents listed more than one key challenge.		

Following the broad-based barriers discussed previously, agents were then asked via another open-ended question to identify major barriers in communicating messages about Florida AGNR to various audiences, including the general public, government, Extension clientele, and media. Responses varied for each audience, but frequent barriers mentioned included access to appropriate individuals and materials; lack of interest, awareness, and knowledge of various target audiences; competing interests and priorities of target

audiences; lack of consistency in message delivery; and a lack of resources. Table 3 displays the top barriers to communicating AGNR messages to each audience.

### ***Barriers in Communicating to the General Public***

In relating messages to the general public, 46% ( $n = 58$ ) listed a lack of public interest, knowledge, and awareness as the top barrier. For example, one agent stated that "there is a lack of general knowledge about how important farming is to our well-being and environment," while another stated "the topic is not exciting enough to attract long-term interest." Other domains concerning barriers to communicating Florida AGNR awareness messages to the public included (a) a lack of access to various resources and large numbers of people, (b) conflicting messages from the media, (c) a lack of funding, and (d) a lack of credible information.

### ***Barriers in Communicating to the Government***

When asked about the greatest barriers Florida Extension agents had in communicating AGNR awareness messages to the government, many ( $n = 39$ , 33%) voiced frustration about competing agricultural interests with an urban population and developers. Comments about this ranged from "they care more about what development wants" to "there are more votes in urban areas." Other top domains in this category included (a) accessing officials (specifically having the time, knowledge of whom to contact, and money to do so); (b) apathy and a lack of interest and understanding from the government; (c) a predetermined political agenda that does not support AGNR; and (d) a lack of credible, consistent, and effective messages.

### ***Barriers in Communicating to Clientele***

Regarding key barriers in communicating AGNR to Extension clientele, the top perceived barrier, cited by 36% ( $n = 41$ ), was a deficiency of clear messages containing reliable, relatable, and objective data. For example, agents voiced that "there is a lack of a clear and uniform message from agriculture" and that "it is difficult knowing how to get the correct information to the correct person." Other frequently listed barriers in this area included (a) a lack of interest in AGNR-related issues from clientele (specifically, clients do not see how AGNR affects them and how they can make a difference in the issues addressed by agents), and (b) an overall lack of time from both farmers and agents. However, 11 agents (10%) stated that they did not experience barriers when communicating to their clientele.

### ***Barriers in Communicating to the Media***

Concerning barriers in communicating AGNR-related messages to the media, the majority ( $n = 75$ , 68%) voiced a lack of effective and objective message delivery as a top barrier. Agents felt that "agriculture is not a 'sexy' or exciting topic to most of the public" and that "agriculture and natural resources are complex issues that aren't easy to boil down into 'sound bites.'" Further comments in this area concerned AGNR's lack of: "newsworthiness," "killings, bombings, and sex scandals," "sensational messages," and "catchy headlines." Other top-listed barriers to communicating to the media included (a) a lack of AGNR understanding and education among the media, (b) a lack of time and money for agents to address the issue, and (c) a lack of access to up-to-date media contacts. Only 8% ( $n = 9$ ) of the responding agents reported that they did not have a problem communicating messages about Florida AGNR to the media.

**Table 3.**

Greatest Barriers to Effectively Communicating Messages about Florida Agriculture and Natural Resources

<b>To the General Public (n = 126)</b>	<b>f</b>	<b>%</b>
Lack of public interest, knowledge and awareness	58	46
Lack of access: to materials/educational resources and to large numbers of people (using understandable, effective and impacting messages)	46	37
Conflicting messages (with biased points of view) from the media	14	11
Lack of funding	11	9
Lack of credible information	5	4
<b>To the Government (n = 119)</b>	<b>f</b>	<b>%</b>
Competing interests with urban residents and developers	39	33
Accessing officials (time, knowing who to contact, and money to do so)	24	20
Apathy/lack of governmental interest and understanding	23	19
A predetermined political agenda that is not in favor of AGNR	20	17
Lack of credible, consistent and impacting messages/data for the government	19	16
<b>To Clientele (n = 115)</b>	<b>f</b>	<b>%</b>
Lack of clear messages with reliable, relatable and objective data, and a lacking strategy to get the right information to the right audience	41	36
Lack of AGNR interest, understanding and connectedness from clientele	35	30
Time and money: busy farmers and agents along with finding the right timing	33	29
Not a problem	11	10
<b>To the Media (n = 110)</b>	<b>f</b>	<b>%</b>
Lack of effective, exciting, interesting and objective means of message delivery	75	68
Media lack of AGNR understanding and education	13	12
Agent lack of time and money	10	9
Not a problem	9	8
Lack of access to up-to-date media contact lists	6	6
Note. Total percentages sum to over 100% because many respondents listed more than one domain per response.		

## Research Question #2: Web Site Use-Likelihood and Desired Features

The goal of the second research question was to identify the likelihood that agents would use a comprehensive AGNR awareness Web site and to pinpoint the specific information such a Web site should

include. Agents were first asked to rate their likelihood of using a comprehensive Florida AGNR awareness Web site that provides up-to-date information via a 5-point Likert-type scale ranging from 1 = *Not at all likely* to 5 = *Very likely*. The majority ( $n = 108, 85\%$ ) indicated they would be either "Somewhat likely" or "Very likely" to use the Web site. The mean likelihood of Web site use was 4.23 ( $SD = 0.90$ ).

Concerning the information that such a Web site should provide, most agents rated "Fact sheets" ( $M = 4.40, SD = 0.78$ ), "Economic facts" ( $M = 4.19, SD = 0.95$ ), and "Downloadable brochures" ( $M = 4.16, SD = 0.86$ ) as features they would be very likely to use (Table 4).

**Table 4.**

Rated Likelihood of Using Various Features on an Agricultural and Natural Resources Awareness Web Site

Features	<i>N</i>	<i>M</i>	<i>SD</i>
"Ready to use" curricula/lesson plans	124	3.90	0.99
Fact sheets	124	4.40	0.78
Video	123	3.59	1.07
Economic facts	124	4.19	0.95
Downloadable brochures	124	4.16	0.86
Interactive maps	124	3.67	1.01
Invitations to specific audiences	122	3.48	1.05
PowerPoint presentations	123	3.98	0.95
Note. Scale: 1 = <i>Not at all likely</i> ; 2 = <i>Not very likely</i> ; 3 = <i>Neutral</i> ; 4 = <i>Somewhat likely</i> ; 5 = <i>Very likely</i> .			

## Conclusions

Results of the study described here illustrate how assessing Extension agent needs regarding AGNR awareness could provide a unique perspective into current barriers facing Extension. For example, the study found that (a) a lack of interest, knowledge, and awareness among all target audiences (the general public, government, clientele, and media); (b) a lack of agent access to resources and key contacts; and (c) inconsistent and ineffective message delivery methods were the overall top barriers in communicating about AGNR.

To improve interest in AGNR-related topics at the state and national level, Extension professionals might consider employing innovative and interactive teaching techniques as part of their educational programs and/or using a "flashy" topic as an interest approach. Given that most Extension audiences are voluntary participants, implementing educational and entertaining message delivery techniques may also enhance the visibility of such programs if their "edutainment" value is advertised.

To improve agents' ability to access resources and key contacts at the state and national level, new agent orientation sessions should include training on how to acquire such information from Internet and internal document sources. Perhaps technology could be used as a method for enhancing the consistency that

educational messages are delivered to the public. For example, on-line journaling through Internet discussion boards could allow Extension professionals to share and reflect on successes/pitfalls in their outreach efforts with various target audiences.

The combination of a quantitative and qualitative approach can provide valuable information when conducting a needs assessment. For example, although inconsistency in communication efforts was previously identified in the literature (Brain & Fuhrman, 2007; Haug, 1999; McDowell, 2004), assessing agents directly via mixed methods resulted in identification of several additional barriers that were varied in nature depending on the target audience (Table 3). Very few agents mentioned "information overload" or being "too busy" as key barriers in communicating about AGNR awareness, although these were identified as major barriers by key Florida Extension leaders in a separate study regarding the same initiative (Brain & Fuhrman, 2007).

Concerning a new AGNR awareness Web site as a potential opportunity for overcoming listed barriers, most agents stated they would likely use such a Web site. However, this Web site should address many of the top AGNR awareness challenges they had listed and do so primarily via fact sheets, economic facts, and downloadable brochures.

Change *is* hard. As stated by behavior change and adult learning theorists (Birkenholz, 1999; Knowles, 1980; McKenzie-Mohr, 1999), targeting programs via stakeholder input is recommended as a practice to help establish a sense of program ownership and increase the likelihood of success/sustainability in any change effort. However, the change effort must be effectively communicated among selected change champions (such as several respected Extension professionals) for a change such as adopting a Web site to "stick."

For Extension offices considering the use of a comprehensive AGNR awareness Web site, visible support from county and state Extension leadership is extremely important. Prompts and reminders are also suggested to enhance the likelihood that Web-site use becomes habitual (McKenzie-Mohr & Smith, 1999). Finally, and perhaps most important, after agent input has been gathered during the planning phases of the Web site, providing feedback to agents on how their input was addressed will create a sense of ownership and improve the likelihood of permanent adoption.

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