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Analyzing the Natural Resource Extension Needs of Spanish-Speakers: A Perspective from Florida

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Abstract: Hispanics are the country's fastest growing minority group. The study reported here surveyed and assessed Extension agents from two demographically different regions in Florida on perceptions and attitudes about the need, quality, and dissemination of Spanish Extension materials. Results showed Extension programs are important sources of information for Spanish-speakers from a region with a high population of Hispanics. However, Extension agents do not feel adequately prepared to reach this audience, and resources are insufficient, especially on critical environmental topics relevant to the audience. The study demonstrates the need to develop regionally and culturally relevant Spanish Extension materials for urban Spanish-speakers.

Introduction

As of July 2007, the estimated U.S. Hispanic population was 45.5 million, representing 15% of the total population (U.S. Census Bureau, 2008). Hispanics are the U.S.' fastest growing minority group and have become Florida's largest minority group, with the largest proportion of Florida's Hispanics residing in south Florida, as opposed to north Florida, which is predominantly Non-Hispanic White and African-American. Approximately 90% of Hispanics were living in urban areas in 2000 and are among the U.S.' most urbanized ethnic/racial group, comprising only 7% of Florida's total rural population in 2000 (USDA, 2004). Outside of Florida, Hispanics are currently the fastest growing segment of rural residents, in Southeastern and Midwestern counties (USDA, 2004).

Many Hispanics/Latinos, or people of Latin American origin, often face language and citizenship challenges when trying to assimilate into the U.S. culture (Farner, Rhoads, Cutz, & Farner, 2005; USDA, 2004). Many Hispanic adults, who are overwhelmingly native Spanish-speakers, have limited English proficiency (Pew Hispanic Center, 2002; Tse, 2001). According to the U.S. Census Bureau (2009), in Florida 44% of Hispanics speak English "less than very well," and 29% entered the U.S. in 2000 or later. This inability to acquire English-speaking skills rapidly is exacerbated by long workdays with irregular schedules and limited availability of courses in English as a Second Language (Portes & Rumbaut, 1990; Farner et al., 2005). This despite that 72% of Florida's Hispanics have at least a high school education compared with the national average of 80% (U.S. Census Bureau 2000 & 2009).

Given the fact that there is a substantial population of Spanish-speakers (i.e., Hispanics who speak English "less than very well") in the U.S. using natural resources and affecting the environment, it is important that these audiences are targeted by Extension educational programs (Farner et al., 2005; Hobbs, 2004; Watson, 2001). Though some educational programs designed specifically for Spanish-speakers currently exist (Farner et al., 2005), few assessments have been conducted that measure the effectiveness of delivering services or understanding their needs.

Because Extension agents are often the primary intermediary or contact point between the community and education efforts, the study reported here surveyed Extension agents' perceptions of the need for environmental and natural resources outreach materials and programs to reach Spanish-speaking communities. The specific objective of the study was to identify and assess the need for Spanish language Extension material about natural resource and environmental topics by comparing two very different regions: south Florida, with a substantial Hispanic population, and north Florida, with a smaller but growing population of Hispanics. The study results can help assess natural resource Extension efforts nation-wide aimed at the growing

Spanish-speaking population and can benefit different community groups, such as neighborhood associations, emergency management services, school teachers, and others interested in educating minority groups.

Methods

A statewide survey was electronically mailed to 809 Extension agents (EA) from the University of Florida's Institute of Food and Agricultural Sciences (UF-IFAS) during the summer of 2008. Prior to the survey, the UF-IFAS Associate Dean sent a request to EAs asking for their participation in the survey as a means of establishing trust in our survey instrument. A Web survey was developed using Survey Monkey <<http://surveymonkey.com>> and sent electronically on June 10, 2008 to all respondents via a UF-IFAS listserv provided by the Extension Associate Dean's Office. A follow-up email was sent 8 days later to non-respondents to increase the response rate. Survey questions were pre-tested with 16 Extension agents and USDA Forest Service Technology Transfer Specialists. The Total Quality Design method by Dillman (2000) was used in both the development and implementation of the survey. "Hispanic" and "Spanish-speaking" are not synonymous in the study. The term "Spanish-speaking audiences" for the purpose of the study were Hispanics/Latinos who have difficulties communicating in English (oral and written) and speak primarily in their native Spanish language.

A total of 174 EAs responded to the survey for a 22% response rate. Unfortunately, resources were not available to test for the effect of bias from non-responders. Respondents included both county- and state-level Extension faculty, others identifying themselves as "state and county employees," and U.S.D.A. Forest Service employees. Florida's Hispanic population is 17%, which is the third largest Hispanic state population in the U.S. (U.S. Census Bureau Newsroom, 2008), and mostly resides in the southern part of the state. Therefore, surveys were stratified using self-reported zip codes into north and south Florida. These two very different regions with differing demographic characteristics in terms of Hispanics can serve as a case study to compare other regions in the U.S. with large Spanish-speaking populations and others with smaller yet growing populations of Spanish speakers.

Extension agents were asked 23 questions in regard to their perceptions and attitudes about the need for, quality of, and preferred dissemination methods of Spanish Extension materials on the University of Florida's Electronic Data Information Source (EDIS). Responses were measured using 2- to 6-point Likert scales, and data on Spanish-speaking abilities were also collected. Survey results were statistically analyzed using tests of equal or given proportions for differences statewide and by "north" (north of Tampa-Orlando-Cocoa Beach, FL) and "south" (south of and including Tampa-Orlando-Cocoa Beach, FL) portions of the state. The function "prop.test" in R Statistical Programming Language Version 2.9.1, was used to test the hypotheses that response from north and south Florida were statistically different by producing confidence intervals for different categorical responses at a 95% confidence interval.

Results

Overall, Spanish-speaking audiences do not make up a large percentage of participants in Extension activities in Florida. Sixty percent of EAs reported no participation by Spanish-speaking audiences, and 26% reported less than 10%. Despite low participation by Spanish-speakers, most EAs (with no statistical difference between north and south Florida), believed Extension materials should be developed into languages other than English (83%) (Table 1). There was no statistical difference between the number of responders to this question before and after the email reminder was sent. South Florida had significantly higher participation by Spanish-speakers than north Florida (Table 2). If made available, 24% of responding EAs stated that they would use these materials about once a month. Currently south Florida EAs use Extension materials in other languages significantly more often (38%) than those in north Florida (12%) ($p = 0.05$).

Table 1.

Should Extension Material Be Developed in English Only and in No Other Language?

Response	Florida	North Florida	South Florida
Yes	17%	20%	15%
No	83%	80%	85%
N = 174			

Table 2.

The Participation of Spanish-Speaking Audiences in Florida Extension Activities

Response	Florida	North Florida	South Florida
None	60%	75%	42%*
Less than 10%	26%	21%	34%
10% - 25%	9%	4%	12%
25% - 50%	4%	0%	10%*
50% - 75%	1%	0%	2%
More than 75%	0%	0%	0%
* p-value ≤ 0.05			

Overall, 84% of EAs in Florida felt that the inability to communicate with their Spanish-speaking audiences hindered their work (i.e., the sum of those responding as "sometimes," "often," and "very often"), which was significantly greater with south Florida EAs (Table 3). Respondent's Spanish-language comprehension, speaking, and reading skills were mostly basic or limited (Table 5), especially in North Florida. Aside from other Spanish-speaking persons (e.g., family and neighbors), Extension materials and events were identified as frequent sources of information used by Spanish-speakers (Table 4). The top two preferred Extension materials for reaching Spanish-speaking audiences were fact sheets and brochures. Other Extension materials mentioned included posters, slide presentations, online materials from different websites, bulletins, booklets, and handbooks.

Table 3.

An Assessment on Whether the Inability to Communicate with Spanish-Speaking Audiences is a Hindrance for Florida Extension Agents

Response	Florida	North Florida	South Florida
Never	3%	5%	2%
Rarely	14%	21%	2%*

Sometimes	47%	53%	43%
Often	22%	12%	35%*
Very often	14%	9%	18%
* p-value ≤ 0.05			

Table 4.

Information Sources Used by Spanish-Speakers on Topics Related to the Environment and Natural Resources

Sources of Information by Importance		Very Poor	Poor	Fairly Good	Good	Very Good	Don't Know
1 st	Family/Neighbors/ Other Spanish-speaking people	3%	12%	15%	14%	19%	37%
2 nd	Extension events (i.e. field days, workshops, conferences)	14%	36%	14%	4%	4%	28%
3 rd	Radio or TV	3%	12%	15%	13%	8%	49%
4 th	Extension publications from EDIS	13%	36%	17%	2%	4%	29%
5 th	Government and non-government Extension publications	7%	24%	12%	9%	2%	47%
6 th	Commercial publications	11%	25%	11%	7%	0%	46%
7 th	Internet (other than EDIS)	5%	18%	13%	7%	3%	54%

Table 5.

Proficiency of Florida Extension Agents in Terms of Reading, Writing, Speaking, and Comprehension of the Spanish Language

Skill	Florida			North Florida	South Florida
	None	Basic or Limited	Working or Professional		
Comprehension	38%	50%	12%	44%	31%
Speaking	41%	49%	10%	46%	36%
Reading	44%	44%	12%	52%	36%*
Writing	61%	29%	9%	69%	53%*
* p-value<0.1					

The EDIS, information from government agencies, the Internet, and workshops were the top information sources currently used by EAs (Figure 1). However, EAs and publications from EDIS were ranked "poor" in meeting the needs of Spanish-speaking audiences for information (Table 4). Although the "overall quality" of EDIS was found to be satisfactory, the coverage of relevant topics was not (Figure 2) and was found to be significantly greater in south Florida, where respondents indicated that the natural resource and environmental topics needing information translated into Spanish were catastrophic events management (e.g., hurricanes and floods), environmental horticulture, arboriculture, and agricultural production (Figure 3), with similar responses from both north and south Florida EAs. Additional natural resource and environmental topics mentioned were natural resource management, forestry, urban forestry and wildland-urban interface, ecological restoration, and agroforestry.

Figure 1.
Sources of Information and Use by Florida Extension Agents

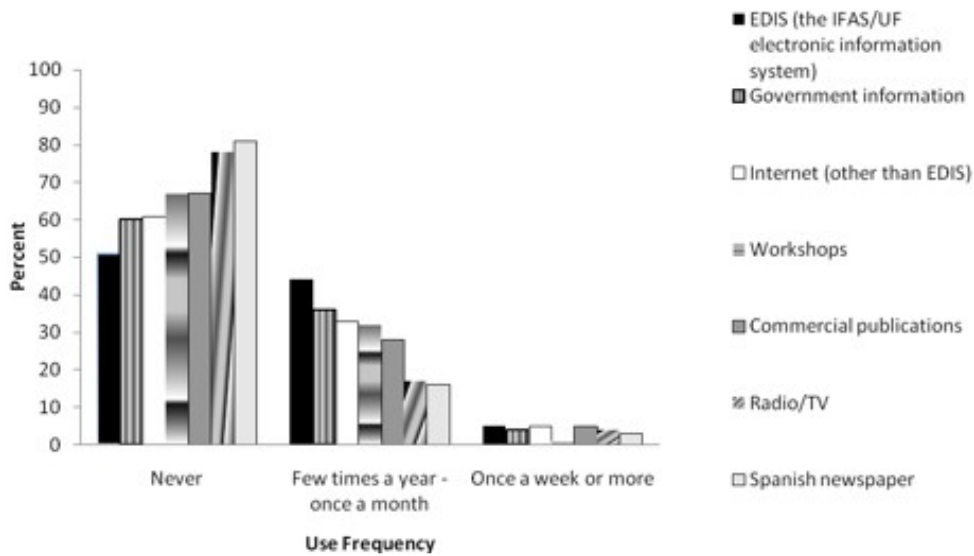
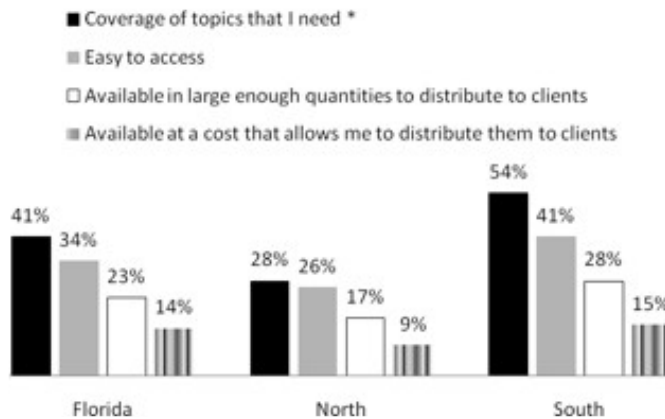


Figure 2.
Quality of Extension Educational Materials Available from the University of Florida



*Significant difference between North and South Florida ($p=0.05$)

Discussion

Results indicate that natural resources and environmental Extension programs could play an important role among Spanish-speaking audiences from two different regions with varying populations of Hispanics. Extension agents expressed a need to reach these audiences through the translation of existing Extension materials and placed importance on the potential to reach this audience with these materials and events. However, EAs are not able to effectively communicate this important information to Spanish-speaking audiences due to the language barriers and the dearth of translated materials.

Only 3% of Florida's Hispanics are employed in the farm, forestry, and fishing sectors (U.S. Census Bureau, 2009). This indicates that Hispanics are at least in Florida are mostly urban, have at least a high school-level education, and many are relatively recent arrivals from Latin America. We found few studies focusing on this audience and topic (Farner et al. 2005). However, at the national level, a study by Swisher, Brennan, & Shah (2007) found that Hispanic farmers and ranchers preferred to communicate and receive information in Spanish, but they did not think there was a significant language barrier. This group likely possesses sufficient English-speaking and reading abilities by having lived and worked in the U.S. for a longer period of time. In contrast, natural resource professionals working with these farmers and ranchers did perceive language as a major factor for not reaching out to this audience.

From a regional perspective, we found there is a need for more locally specific Extension programs targeting Spanish-speakers in heavily Hispanic communities. Despite that Spanish-language materials are not "important" statewide, responses from south Florida EAs and U.S. Census results indicate the need for this type of material in "Hispanic" south Florida, where over 61% of Florida's Hispanic population lives in highly urbanized south Florida's Broward, Miami-Dade, Monroe, and Palm Beach counties alone (The Metropolitan Center, 2007).

Furthermore, according to the 2005-2007 American Community Survey 3-year estimates, 32% of Hispanic households in Florida ($n = 403,000$) are considered *linguistically isolated households*, where all household members 14 years old and over have at least some difficulty with English (U.S. Census Bureau, 2009). This is likely the case in other regions in the U.S. (U.S. Census Bureau Newsroom, 2000). Swisher, Brennan, and Shah (2007) found language barriers and perceived discrimination by other non-Hispanic farmers and government institutions to be the two major cultural constraints among Latino farmers in heavily Hispanic communities.

Extension agents in both north and south Florida recognize the need for Extension materials in languages other than English and consider their inability to communicate with their Spanish-speaking audiences a hindrance to successfully performing their work. This inability to reach Hispanic audiences may also be attributed to their low participation in Extension activities in Florida. In our study, the top two preferred Extension materials for effectively reaching Spanish-speaking audiences were fact sheets and brochures.

However, what EAs perceive as effective may not accurately reflect Spanish-speakers' preferences. Swisher, Brennan, and Shah (2007) found discrepancies between information and services available and those that actually reach or are used by Hispanic farmers. While EAs did not consider government regulations and programs to be major constraints for reaching Hispanic farmers, the farmers themselves did. In addition, Hispanic farmers in the Swisher, Brennan, and Shah study (2007) believed that Extension programs and universities play a regulatory role, rather than that of an education-provider role. This caused Hispanic farmers to be apprehensive about government programs and institutions (e.g., enforcement of illegal immigration laws), and hence they did not approach EAs for needed educational advice.

The lack of Spanish Extension materials available was also identified as a major barrier to communicating with Spanish-speaking audiences in our study, with a greater need for these materials found in south Florida. Although the study did not really assess accessibility issues as defined by the Swisher, Brennan, and Shah (2007), we found materials were not available for topics perceived as important for these audiences. Considering Florida's vulnerability to hurricanes and the importance of horticulture within Florida, the ability to reach diverse audiences with regionally relevant information should be a critical role of Extension programs.

Although the focus of our study was on language ability, culture is intricately connected to language and should not be overlooked (Hobbs, 2004; Watson, 2001). By understanding a community's culture, a better assessment of needs can be made. By doing so, Extension educational programs could consider a community's cultural values and traditions, in addition to language, in order to more successfully engage Spanish-speaking audiences (Koss-Chioino & Vargas, 1999). Many regions in the U.S. with Hispanics communities maintain unique culture and language, and a constant presence of non-assimilated, Spanish-speaking, and increasingly non-rural, better-educated Hispanic populace (Huntington 2004). Although this was not studied, care is needed when applying results from studies of rural, agricultural, and less educated Extension audiences to these urban areas and their unique characteristics and needs (Lopez, Lopez, Wilkins, Torres, Valdez, Teer, & Bowser, 2005). Results should help justify improvements to Extension programs for an underserved population on topics of natural resources and the environment.

Limitations

Limitations of the study included a low response rate, no information of non-response bias by EAs, and the influence on responders of the Extension Administrator's request to participate in the survey. Because UF-IFAS is an agricultural commodity-oriented institution, agronomists predominated survey respondents and might possibly not interact with urban communities on topics related to the environment, sustainability, and the wise use of natural resources. Additionally, because the majority of respondents were not Spanish-speakers, they might not effectively understand the needs of their Spanish-speaking audiences. Because of this, responses may represent more "socially acceptable responses" rather than actually representing what their Spanish-speaking audience really thinks. Finally, we did not directly survey Florida's Spanish-speaking Extension audience, thus missing perhaps the most important point of view.

Conclusion

Our study identified and assessed the need by EAs with Hispanic audiences for Spanish-language Extension materials on natural resource and the environment and found the following.

- Extension agents believe they are an important source of information for Spanish-speaking residents, yet natural resource EAs are not prepared to reach out to this segment of the population.
- There is a scarcity of information on important natural resource and environmental topics relevant to these communities, particularly those that are urban and better educated.
- The importance of reaching Spanish-speaking audiences using more specialized and local Spanish language Extension programs will only become more pressing.
- Extension agents need to understand the cultural and community-specific needs of underserved

communities to address language and cultural barriers.

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