The *Journal of International Agricultural and Extension Education (JIAEE)* is the official refereed publication of the Association for International Agricultural and Extension Education (AIAEE). The purpose of the *JIAEE* is to enhance the research and knowledge base of agricultural and extension education from an international perspective.

Articles intended for publication should focus on international agricultural education and/or international extension education. Articles should relate to current or emerging issues, cite appropriate literature, and develop implications for international agricultural and extension education. **Manuscripts, or portions of manuscripts, must not have been published or be under consideration for publication by another journal.**

Three types of articles are solicited for the *JIAEE*: Feature Articles; Commentary Articles; Tools of the Profession Articles; and Book Reviews.

**Feature Articles**
Feature articles focus on philosophy, current or emerging issues, and the methodology and practical application of specific research and appropriate technologies, which have implications for developed and developing countries. For publication in the *JIAEE*, feature articles must pass the *JIAEE’s double blind, referee process*, where peer reviewers evaluate manuscript content and ensure readability. Reviewers are selected from the AIAEE membership. In the double blind, referee process, all references to authors are removed before the manuscript is sent to reviewers. Feature Articles may be submitted for peer review a total of three times before they are no longer acceptable for publication in the *JIAEE*.

**Commentary Articles**
Commentary articles state an opinion, offer a challenge, or present a thought-provoking idea on an issue of concern to international agricultural and extension education, including a published article in the *JIAEE*. Commentary articles are reviewed by two members of the Editorial Board for appropriateness, readability, and relevance to the *JIAEE*.

**Tools of the Profession Articles**
Tools of the Profession articles report specific techniques, materials, books and technologies that can be useful for agricultural and extension educators in a global context and/or in a country/region. Tools of the Profession articles are reviewed by two members of the Editorial Board for appropriateness, readability, and relevance to the *JIAEE*.

**Book Reviews**
Book reviews summarize new publications relevant to the field and provide a critical assessment.

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# Journal of International Agricultural and Extension Education

Volume 15 Number 3 Fall 2008

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From the Editors

As we finish out our first year as coeditors, we would like to thank JIAEE contributors, reviewers, and editorial board members for their support over the past year. Over the past couple years there have been approximately 200 submissions to JIAEE. Over 300 reviews have been conducted by JIAEE reviewers. Forty-four reviewers from nine countries reviewed an approximate average of five papers each over the past year. We are constantly seeking to expand the reviewer pool; both in terms of numbers of people and countries represented. We hope that when called upon to review a paper you will gladly accept the task. The acceptance rate for the year 2008 (Volume 15) is 20%; for 2007 (Volume 14) it was 18%; for 2006 (Volume 13) it was 25%.

Carrying out the business of JIAEE has been extremely rewarding for us; both personally and professionally. Gary Wingenbach was very helpful is getting us started and remains, as past editor, an integral part of the team. Jovonna Ivester, Administrative Assistant, at Texas A&M University has also contributed a great deal towards keeping the Journal moving forward.

In this issue you will find an excellent article from Gary Wingenbach titled “Journal of International Agricultural and Extension Education Scholarship: Passport to the World.” We strongly encourage you to read this insightful article and think about how you can help AIAEE “adapt, adopt, or create its own international research agenda.” Reading the current issue of “The Informer” Gary writes that “AIAEE needs your help” with moving the association forward. We echo his sentiments and note JIAEE also needs your help in moving forward.

This issue is the last issue that we are coeditors of the Journal. As you may recall in volume 15(1), we outlined a plan for sustainability that included restructuring JIAEE to divide the duties of the Editor into an Executive Editor and a Managing Editor. The Executive Editor will set the overall standards for publishing including all post acceptance duties; the Managing Editor will handle duties related to manuscript submissions and review.

We hope you enjoy this issue of JIAEE that includes excellent articles that contribute to the Journal’s mission to enhance the research and knowledge base of agricultural and extension education from an international perspective.

Sincerely,

James R. Lindner and Kim E. Dooley, Editors
Journal of International Agricultural and Extension Education

Fall 2008 5
Abstract

The Journal of International Agricultural and Extension Education (JIAEE) has been a constant product of the Association for International Agricultural and Extension Education since 1994. Research topics and the journal’s importance to researchers have changed over time, but its seminal obligation as a contributor to the body of scholarly knowledge has not; its purpose is to enhance the research and knowledge base of agricultural and extension education from an international perspective.

The JIAEE serves as the AIAEE’s passport to the world, when considering the many unknown audiences who first learn about the AIAEE through digital library searches for international agricultural and extension education periodicals. From that basic premise, the goal for the JIAEE should be to publish only high quality, relevant, focused research for international agricultural and extension education. However, much of the scholarship reported in the JIAEE is fragmented, thereby having minimal impact or significance to the body of scholarly knowledge. The AIAEE needs to adapt, adopt, or create its own international research agenda. Persistent, rigorous investigations of our research agenda’s priority areas will produce a body of scholarly knowledge that distinguishes international agricultural and extension education as a discipline.

Keywords: Body of Knowledge, Research Agenda, Scholarship, JIAEE Topics

Acknowledgment: This paper was developed and refereed under special invitation from the JIAEE Editorial Board as a contribution to the annual Seminal Article Series.
Introduction

The “Seminal Articles Series” of the Journal of International Agricultural and Extension Education (JIAEE) began in fall 2005. From its inception, the purpose of this series has been to present an “annual scholarly event designed to encourage debate within the Association” and it “may provide guidance in developing a future theme-focused JIAEE issue” (Wingenbach, 2005, p. 4). The first three contributors to the JIAEE seminal article series are well-known, highly-respected individuals with many years of service and scholarly contributions to the Association for International Agricultural and Extension Education (AIAEE). This author is not an intellectual equal compared to Christiansen (2005), Swanson (2006), or Ludwig (2007); however this invited article may spark debate within AIAEE that leads to actionable efforts for enhancing the scholarship reported in the JIAEE. Eventually, these efforts will lead to a body of scholarly knowledge that distinguishes international agricultural and extension education as a discipline.

The JIAEE is not the only outwardly product of the AIAEE, but for many audiences unknown to the AIAEE, it may be the most easily accessed and visible product. AIAEE membership \( (N \approx 140/\text{year}) \) has remained steady over the past 10 years. During that time, JIAEE subscriptions have mirrored AIAEE memberships, however at least one dozen libraries became subscribers to the JIAEE during the same decade. Library subscriptions increase the likelihood that audiences outside the AIAEE membership will find the JIAEE. Also, continuous development of AIAEE’s Web site (http://www.aiaee.org/index.html) and the JIAEE’s primary Web page (http://www.aiaee.org/journal.html) adds potential for attracting new audiences through Internet searches.

When the JIAEE began in 1994, computer technologies and the Internet were not as readily available as they are today. Researchers likely searched card catalogs and library shelves for international agricultural and extension education periodicals. Today, researchers are more inclined to use Internet technologies, specifically Google™ and Google Scholar™ (Brophy & Bawden, 2005; Tenopir, 2005), to facilitate their literature searches. A recent search for sources using Google Scholar, dated 1998 to present, using the keywords “international agricultural and extension education” anywhere in the article, returned 302 hits. Granted, some of these hits were duplicates, but if only 50% were originals, how long would it take you to sort through 151 library cards or shelves to locate those original sources? Incidentally, a similar search using the keywords “Journal of International Agricultural and Extension Education” returned 202 hits.

The pervasiveness and power of information technologies warrants attention from the AIAEE membership to better use the Internet for promoting international agricultural and extension education research. If the JIAEE is an easily identifiable product of the AIAEE, then its contributions the body of scholarly knowledge for international agricultural and extension education research should be of the utmost significance. The JIAEE is, for many purposes, the AIAEE’s passport to the world. It is the first impression many audiences unfamiliar with the AIAEE acquire; the JIAEE should make a positive lasting impression. It is time to reconsider the importance and significance of the body of scholarly knowledge reported in the JIAEE.

Purpose

The purpose of this article was to examine the body of scholarly knowledge reported in the JIAEE. The examination was focused on research subject-matter topics, as previously reported in the JIAEE, and their
congruency with JIAEE’s list of acceptable topics for review. It was hoped that practical solutions could be offered to focus the collective research efforts of the AIAEE.

Discussion

A focused research agenda that serves the AIAEE organization, evolves into a true body of scholarly knowledge, and distinguishes international agricultural and extension education as a discipline, has been presented several times in the JIAEE. Miller and Sandman (2000) shared their thoughts about scholarship, defined by university academicians, and contrasted them with AIAEE’s presence of scholarship in the JIAEE. Miller and Sandman offered many practical suggestions (see Miller & Sandman, pp. 41-43), based on universities’ (Wisconsin and Oregon State) definitions of scholarly activities that would help the AIAEE practitioner focus his/her scholarship. The authors concluded that AIAEE scholars “. . . will need to have both the inclination and well-honored skills in knowledge generation, application and transmission . . . Much of our research is fraught with methodological errors in sampling, design and/or analysis. Research, simply, must get better” (p. 40). Miller and Sandman (1998; as cited in Miller & Sandman, 2000) contended that

Our [AIAEE] scholarship has, too often, tended to be accounts, stories, if you will, of projects and activities. Account after account of study abroad programs and study tours, for example, do not advance the knowledge base of the discipline unless someone analyzes these experiences and makes meaning from them for the discipline. (p. 40)

Have we, as an organization of practitioner scholars, evolved since Miller and Sandman’s (2000) edict to the AIAEE was issued? A scant 15 months after the Miller and Sandman article was published in the JIAEE, Radhakrishna, Connors, Elliot, and Verma (2001) reported on the JIAEE’s published articles from its initial seven years. Radhakrishna et al. based their study, in part, on the vision of the JIAEE in the year 2005 as predicted by Steele (1996; as cited in Radhakrishna et al., 2001). Steele’s vision of the JIAEE in the year 2005 was that it would have

a) become a dynamic, flexible, electronically driven publication; b) attracted a worldwide circulation; c) received significant volume of manuscripts from around the world; d) diversified the contents of the journal to include research-based, philosophical, applied and practical articles, book reviews, commentary, and feedback, etc.; and e) multilingual versions, particularly Spanish, French and Arabic.

(Radhakrishna et al., 2001, p. 32)

Radhakrishna et al. concluded that there was “a tendency [in published articles] to focus more on research than on developmental, philosophical, and curriculum aspects of the disciplines of agricultural education and extension education” (p. 37). Also noted was the fact that a variety of subject matter topics were published; both findings supported the argument posed by Miller and Sandman (2001).

Christiansen (2005) continued the examination of JIAEE scholarship through his comparison of Radhakrishna’s et al. (2001) study of articles published from 1994–2000, and Christiansen’s analysis of the JIAEE’s contents from 2001–2005. Christiansen’s examination of JIAEE’s scholarship was based on the AIAEE’s organizational objective, “Develop state-of-the-art papers on agricultural and Extension education worldwide” (p. 6). Christiansen included feature (n = 107) and commentary (n = 5) articles in his analysis of the JIAEE from spring 2001 to summer 2005. The final issue (fall) for 2005 was included in the following analysis, bringing the total number of articles to 220 (feature articles = 114; commentary articles = 6) for the years 2001–2005.
The case can be made that the JIAEE has specialized in publishing agricultural extension (25%) and agricultural education (~8%) research articles since 1994 (Table 1). However, observations of Radhakrishna’s et al. (2001) and Christiansen’s (2005) analyses coupled with the analysis of the final issue for 2005, present a troublesome historical perspective of the JIAEE’s body of scholarly knowledge.

Table 1

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<td>Agricultural extension (programs and personnel)</td>
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<td>Agricultural education (primarily secondary level)</td>
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<td>8</td>
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<tr>
<td>Sustainability</td>
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<td>Curriculum development and content</td>
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<td>5</td>
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<td>Global issues</td>
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<td>Women’s programs and issues</td>
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<td>5</td>
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<tr>
<td>International agricultural development</td>
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<td>4</td>
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<td>Evaluation (programs and techniques)</td>
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<td>Indigenous knowledge</td>
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<td>Youth, including international knowledge</td>
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<td>Farming systems</td>
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<td>Job satisfaction</td>
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<td>Organizations (support, university partnerships, etc.)</td>
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<td>Applied research and techniques</td>
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<td>Technical subjects (e.g., dairy, AIDS)</td>
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Miller and Sandman’s (2001) warning that AIAEE’s scholarship was fragmented was confirmed by Radhakrishna et al. (2001) and Christiansen (2005). While some of the article categories may be collapsed, 30 identifiable topics of research are too many to build a significant body of scholarly knowledge that distinguishes international agricultural and extension education as a discipline. Some may argue that defining the AIAEE as a “discipline” is not a worthy goal. However, it behooves us to reaffirm AIAEE’s sixth objective, “Encourage research within the profession that will favorably impact on agricultural and Extension programs in countries around the world” (AIAEE Objectives, n.d., ¶ 6).

How will this objective be achieved if our goal is not to establish the AIAEE’s work as a bona-fide discipline, which is exemplified through research that impacts agricultural and extension education worldwide?

The JIAEE began contracting with Express Academic Services© to provide online manuscript submission and review systems in mid-2006. Since that time, 189 manuscripts were submitted (7.1/month, 86.2/year); 301 reviews were conducted; and each manuscript averaged only 17 days in the review process (K. Dooley, e-mail communication, September 30, 2008). Paramount to the successful matching of manuscript topics with peer reviewers’ expertise, Express Academic Services© required the JIAEE to submit a list of topics that authors would use to identify the focal points of their manuscripts. JIAEE editors match the authors’ defined topical areas with peer reviewers’ expressed areas of expertise. The list of topics (Table 2) was developed through a consensus-building process with all JIAEE editorial board members in spring 2006.

Only 12 categories were defined as suitable focal points of research for possible publication in the JIAEE. Arguably, two of those categories (Perspectives and U.N. Regions) are not necessarily research focal points, but rather over-arching factors that may be associated with research conducted in one of the remaining 10 categories. When comparing the topics in Table 1 with those in Table 2, we surmise that the JIAEE did not have 30 identifiable research topics/areas from 1994–2005 because several of the “education” subject-matter areas in Table 1 could be grouped within an overall education category. Nevertheless, the AIAEE should redouble their efforts to clearly define their collective body of scholarly knowledge. One method for accomplishing this goal can be learned from the National Research Agenda: Agricultural Education and Communication, Research Priority Areas, 2007–2010 (Osborne, n.d.).

The National Research Agenda (Osborne, n.d.) was the culmination of a joint project of the American Association for Agricultural Education, Association for Communication Excellence, Association for International Agricultural and Extension Education, Association of Leadership Educators, NCAC-24 Experiment Station Committee on Organization and Policy, and The National Council for Agricultural Education. Twenty-seven members from the associations, committee, and council mentioned previously, created the National Research Agenda to communicate “research priorities to numerous state and national interests, including Agricultural Experiment Station directors, USDA program administrators, and funding agencies” (Osborne, n.d., para. 1).

One of the five broad disciplinary dimensions developed by the team was focused on “extension education and outreach,” which could be associated with the scholarship published in the JIAEE. Research Priority Areas were developed, including the area for “agricultural education in domestic and international settings: extension and outreach.” Key Research Questions or critical research problems were developed for each research priority area and specific dimensions of each key research question, designated as Priority Initiatives, were identified. The National
Research Agenda team listed Key Research Questions or critical research problems for “international settings” as

- Ascertain the public’s knowledge, views and openness regarding the agri-food and natural resource system.
- Identify the needs and competencies of stakeholders and professional practitioners in nonformal agricultural extension education.
- Identify appropriate learning systems to be used in nonformal education settings.
- Examine appropriate nonformal educational delivery systems.
- Identify and use evaluation systems to assess program impact. (Osborne, n.d., p. 5)

Table 2

**JIAEE Peer Review Subject-matter Categories and Topical Areas, mid-2006–present**

<table>
<thead>
<tr>
<th>Subject-matter Categories</th>
<th>Topical Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>Adult Learning, Curriculum Issues, Distance Learning, Experiential Learning, Faculty Teaching, Higher Education, Information Technology, Primary/Secondary Education, Student Issues</td>
</tr>
<tr>
<td>Environmental Issues</td>
<td>Agro-ecology, Energy, Ecotourism, Health Care, Natural Resources, Solid Waste Management, Wildlife Biology</td>
</tr>
<tr>
<td>Extension</td>
<td>Administration and Policy, Curriculum Development, Delivery, Methods, Programs, Systems and Models, Theory and Practice</td>
</tr>
<tr>
<td>Partnerships</td>
<td>Community-based Organizations, Cooperatives, Governmental Organizations, Non-Governmental Organizations, Public-Private Networks</td>
</tr>
<tr>
<td>Perspectives</td>
<td>Age, Ethnicity, Gender, Historical, Philosophical</td>
</tr>
<tr>
<td>Planning and Evaluation</td>
<td>Accountability, Competencies, Needs Assessment, Program Effectiveness, Program Evaluation</td>
</tr>
<tr>
<td>Management</td>
<td>Administration, Communications, Leadership, Marketing</td>
</tr>
<tr>
<td>Managing Change</td>
<td>Change Theory, Entrepreneurship, Planned Change, Public Good, Social Change, Technology Transfer</td>
</tr>
<tr>
<td>Research and Methods</td>
<td>Case Study Research, Experimental Research, Participatory Rural Appraisal, Qualitative Research, Rapid Rural Appraisal, Survey Research</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Instructional Design and Delivery, Learner Characteristics, Learning Outcomes, Learning Theory, Teacher Education, Teaching Methods</td>
</tr>
<tr>
<td>Training and Development</td>
<td>Capacity-Building, Community Development, Farmers, Human Resource Development, Participatory Training, Professional Development, Programmatic Issues, Sustainable Development, Youth Organizations</td>
</tr>
<tr>
<td>U.N. Regions</td>
<td>Africa, Americas, Asia, Europe, Oceania</td>
</tr>
</tbody>
</table>
The purpose of listing these critical research problems for those working in international agricultural and extension education research is not to reinvigorate the debate surrounding AIAEE’s acceptance of the National Research Agenda team’s perception of our research foci. The purpose is to promote open-mindedness in thinking about AIAEE’s efforts to adopt, adapt, or create anew, its own set of research priority areas and critical research problems.

Conclusions

The JIAEE can be viewed as AIAEE’s passport to the world, given the ubiquitous Internet connectivity of researchers worldwide. True, there are many stakeholders who are not connected to the Internet, but who may work with AIAEE members. This article is not intended to elicit practitioners’ use of Internet connectivity in international agricultural and extension education projects. It is focused on the fragmentation of AIAEE’s body of scholarly knowledge since 1994, and possible remedies to defragment that scholarship over the next 14 years.

A comparison of research topics published in the JIAEE from 1994 to 2005 revealed a fragmented, singular approach in many research topical areas. Extension education and agricultural education (primarily focused on secondary level schools) produced large numbers of articles, as expected, given the JIAEE’s purpose. However, if our collective body of scholarly knowledge is to grow and evolve, then serious consideration must be given to the research subject-matter categories and topical areas used to receive manuscripts for the JIAEE’s review process. Who among us cannot make the connection between environmental issues and international agricultural and extension education? Collaboration among AIAEE members and/or partnerships between universities worldwide may produce relevant research foci that accounts for environmental issues in relation to international agricultural and extension education.

The upside of examining our body of scholarly knowledge revealed that Steele’s (1996; as cited in Radhakrishna et al., 2001) vision of the JIAEE in the year 2005 has been realized. The JIAEE is a dynamic, flexible, electronically-driven publication, that attracts worldwide circulation, receives a significant volume of manuscripts submitted annually, has diversified content, and is produced in multilingual versions (Spanish and French abstracts). That vision, while pertinent in 2008, can be improved through increased focus on scholarship that is more “...developmental, philosophical, and [attends to the] curriculum aspects of the disciplines of agricultural education and extension education” (Radhakrishna et al., 2001, p. 37). In essence, we will not advance our body of scholarly knowledge through continued research of superficial research problems and/or the use of ill-conceived research methods. Mentor/protégé research relationships are needed in the AIAEE to produce high quality, relevant, focused research for international agricultural and extension education.

The National Research Agenda (Osborne, n.d.) was developed from a U.S.-centric perspective, and its “international” aspects are primarily focused on extension education. Regardless of the perspective or focus, the exercise showed us that a large group of like-minded people can assemble themselves around a common cause: improved communication of their research priorities to stakeholders. The AIAEE could adopt, but most likely needs to adapt or create anew their own Research Priority Areas, Key Research Questions or critical research problems, and Priority Initiatives. Such an undertaking could ignite the process AIAEE needs for establishing a body of scholarly knowledge that distinguishes international agricultural and extension education as a discipline. However, merely defining research priority areas, key questions, etc., will not in and of itself...
establish a body of scholarly knowledge. Persistent, rigorous investigations of those research areas and questions for many years will produce that body of scholarly knowledge that distinguishes international agricultural and extension education as a discipline.

References


Extension in Sub-Saharan Africa: 
Overview and Assessment of Past and Current Models, and Future Prospects

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Abstract

This paper describes the role of agricultural extension in sub-Saharan Africa, and gives a typology for types of extension, which includes the basic forms of public top-down, participatory, and private. An overview of the evidence base for successes or failures of various models is given, which shows that evidence has been mixed on some of the major extension models in SSA, and that it is difficult to show impact for extension. There is also a lack of evidence on some of the newer models, extension reforms, and pluralistic models that involve many different extension providers. In general, though, problems in extension systems were due to a combination of a lack of relevant technology, failure by research and extension to understand and involve clientele in problem definition and solving, lack of incentives for extension agents, and weak linkages between extension, research, and farmers. The current status of extension in various sub-Saharan African countries is assessed, and new models are discussed. A framework for designing and analyzing extension systems is briefly described. Finally, future prospects for extension in sub-Saharan Africa are discussed.

Keywords: Extension, Sub-Saharan Africa, advisory services, impact, models
Introduction
There are many definitions, philosophies, and approaches to agricultural extension, and the views of what extension is all about have changed over time. Extension originally was conceived as a service to “extend” research-based knowledge to the rural sector to improve the lives of farmers. It thus included components of technology transfer, broader rural development goals, management skills, and non-formal education. The traditional view of extension in Africa was very much focused on increasing production, improving yields, training farmers, and transferring technology. Today’s understanding of extension goes beyond technology transfer to facilitation; beyond training to learning, and includes assisting farmer groups to form, dealing with marketing issues, and partnering with a broad range of service providers and other agencies. Thus many people are now using the phrase, “agricultural advisory services,” instead of extension (which can imply a top-down approach and may ignore multiple sources of knowledge). This paper will continue to use the term extension with the understanding that it encompasses the broader definition explained above.

Agricultural extension can be defined as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being (Birner, Davis, Pender, Nkonya, Anandajayasekeram, Ekboir, et al., 2006). This can include different governmental agencies (formerly the main actors in extension), non-governmental organizations (NGOs), producer organizations and other farmer organizations, and private sector actors including input suppliers, purchasers of agricultural products, training organizations, and media groups (Neuchâtel Group, 1999).

Purpose and Objectives
The purpose of this paper is to give an overview of extension experience in Sub-Saharan Africa (SSA), including a typology of extension models used in SSA and worldwide, evidence of the success or failure of various models or extension in general, assessment of the current status of extension and number of agents in selected African countries, and examples of innovative models in use in SSA extension today. A framework for analyzing extension is discussed, as well as prospects for the future of extension in SSA.

Methods and Data Sources
Data were obtained from document analysis, the Internet, and from a simple survey on extension reforms sent out to selected members of the Sub-Saharan Africa Network for Agricultural Advisory Services (SSANAAS) (now known as the African Forum for Agricultural Advisory Services).

Results

Extension Typologies
There are many models and types of extension activities around the world, and several authors have given typologies of extension, shown here for this illustrative review (Table 1). This paper views extension as generally, but not always, falling into three broad categories: diffusion or government-driven; participatory or demand-driven; and private or supply-driven, with the different systems or models falling under these three overall types. Many extension systems in SSA today are combinations of these broad categories.
Table 1

**Typologies of Extension by Various Scholars**

<table>
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<tbody>
<tr>
<td>Top-down</td>
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<tr>
<td>2. Training and visit (T&amp;V)</td>
<td>2. Commodity</td>
<td>2. Commodity</td>
</tr>
<tr>
<td>5. Integrated agricultural development program</td>
<td>5. Project approach</td>
<td>5. Private sector</td>
</tr>
<tr>
<td>Participatory</td>
<td></td>
<td>6. Farmer field schools (FFS)</td>
</tr>
<tr>
<td>1. Farmer information dissemination system</td>
<td></td>
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<tr>
<td>2. Farming system research-extension</td>
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<tr>
<td>Contract farming</td>
<td></td>
<td></td>
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<tr>
<td>1. Commodity development</td>
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<tr>
<td>2. Commodity focused</td>
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<tr>
<td>Rural development</td>
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<tr>
<td>1. Community development</td>
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<tr>
<td>2. Integrated rural development programs</td>
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<td>3. Animation rurale</td>
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**Evidence Base for Successes and Failures of Extension Models**

Extension impacts *per se* are very difficult to show, especially in terms of dealing with attribution issues and linking cause and effect quantitatively (Purcell & Anderson, 1997). Many infrastructural variables and other factors affect agricultural performance in complex and contradictory ways and benefits are difficult to quantify (Anderson, 2007; Birkhaeuser, Evenson, & Feder, 1991). Measurement challenges of several types contribute to the difficulty, and questions of representativeness occur in any attempt at grouping.

Other issues that may confound studies include endogeneity in program placement and extension-farmer interactions, selection bias, farmer-to-farmer information flow, and policies that affect various measures such as productivity. Extension as an input is also difficult to measure, and usually proxies are used (Birkhaeuser et al., 1991). Experimental designs with control groups have been used in a few studies; however, such designs can be problematic. Other problems include the lack of baseline data and the inability to include all contributing variables in production equations. Studies on the training and visit system (T&V) in Burkina Faso and Kenya—which showed high returns to extension (Bindlish & Evenson, 1997)—were later criticized for data errors and limitations due to the use of cross-sectional data (Gautam & Anderson, 1999). Thus, some researchers are skeptical of rates of return studies in Sub-Saharan Africa.

In general, extension has been shown to have significant and positive effects on knowledge, adoption, and productivity. Birkhaeuser et al. (1991) reviewed 48 studies of extension, and found that the majority (36) showed significantly positive results. Studies of rates of return to extension (also in the same paper) generally showed very high numbers (between 13-500%). (But see the above critique of rates.
of return studies.) This review covered a number of different types of extension models, including T&V, but is somewhat dated.

Evenson (1997) reviewed 57 economic impact studies, including seven African countries (the models used were either T&V or not noted). There was a wide range of impact, from no significant difference to highly significant differences with regard to awareness, adoption, and productivity. The variability in results shows that some programs have been highly effective while others have not been. Finally, results showed that the highest payoffs to extension occurred in developing countries that are catching up with industrialized countries and with farmers who have access to schooling, technology, and extension.

Taking into consideration some of the measurement concerns raised by Birkhaeuser and colleagues, Owens, Hoddinott, and Kinsey (2003) estimated the impact of access to extension services on productivity in Zimbabwe by using longitudinal data and controlling for innate productivity using locality dummies, farm plot characteristics, and farmers’ ability. They found that access to one or two visits per year from extension agents raised the value of crop production by about 15%, a statistically significant parameter.

The Integrated Rural Development Project (IRDP) approach was used in many countries, including Kenya and Malawi, starting in the 1970s. IDRP projects (with World Bank support) implemented an integrated extension approach. The IRDP’s goals were to address constraints of smallholders by working synergistically in health, nutrition, agriculture, and education. In agriculture, this included inputs such as extension, research, irrigation, credit, roads, water, electricity, and sometimes schools and health centers. The focus was all technical, however, and left out crucial issues such as training, linkages with research, and management. IRDPs’ weaknesses were that they were supply-driven, inflexible, disregarded many institutions (including NGOs), were multi-sectoral but not holistic, disregarded cost-recovery or privatization, had an enclave mentality, and had limited sustainability (Anderson, 2002).

According to a review by the World Bank’s Operations Evaluation Department of research and extension investments in the 1980s and 1990s, three out of five extension projects in Africa were “satisfactory,” which alluded to how fully the stated objectives were achieved (Purcell & Anderson, 1997). T&V was seen as somewhat satisfactory in Kenya and Somalia. However, Gautam (2000) later instituted a study in Kenya as a result of disagreement on the initially unsatisfactory rating (Gautam & Anderson (1999). In Zimbabwe, a national extension and research project (not T&V) to improve productivity in rural areas via improved incentives for extension staff was as viewed as satisfactory. T&V in Rwanda and Côte d’Ivoire was deemed unsatisfactory.

T&V in particular, and public extension systems in general, came under attack in the 1980s due to the cost of financing coupled with criticisms of irrelevance, inefficiency, ineffectiveness, and lack of equity (Rivera, 2001). In Ethiopia, Dejene (1989) found that the communication system from contact farmers to the rest of the community did not work as expected, and up to 25% of contact farmers did not have the necessary knowledge and skills. In Cameroon, Tchouama and Steele (1997) found that only 30% of respondents had contact with the extension agent, and furthermore had difficulty applying the recommendations. In Nigeria, extension agents lacked communication skills, transportation, and faced cultural barriers (Asiabaka & Bamisile, 1992).

The Bindlish and Evenson (1997) study showed that the T&V management system made extension more effective, led to agricultural growth, and realized high rates of return. However, in Kenya, Gautam
(2000) later found that although T&V had some benefits in terms of staff training, increased geographical coverage, and improved linkages with research, overall the system was inefficient, ineffective, and not financially sustainable.

Initially promoted by the World Bank, T&V has since been criticized within the Bank (Anderson, Feder, & Ganguly, 2006) and others, and is referred to tongue-in-cheek by terms such as “talk and vanish” and “tragic and vain” (Axinn, 1988). Despite the yield increases, the program was not sustainable, and left many countries saddled with huge debts. T&V has shown to be more successful in Asia, where there is more homogeneity within farming systems and higher capacity among agents and farmers. The T&V system was also more successful in promoting very specific packages (where they were suitable). However, the problem is that a tight management system and close control of “messages” does not constitute relevance for the clients.

These problems noted above have led to the reforms of many extension systems, including privatization, decentralization, outsourcing, and participatory or demand-driven aspects. Certain reforms have been formally and informally evaluated. Problems encountered with decentralized extension included use of extension agents for non-extension purposes, lack of financial sustainability, and difficulties in linking to research (Anderson & Feder, 2004). In general, participatory reforms have been seen as promising, while fee-for-service has not been well taken up in the few low-income countries where it has been attempted. However, in general, most extension reforms have yet to be evaluated as to their effectiveness.

Farmer field schools (FFS) (a model or an approach of extension education) have been a recent topic of debate as to their impact in SSA and elsewhere (Davis, 2006; Gallagher, Braun, & Duveskog, in press). Although many positive reports exist on the benefits of the FFS approach, some studies have called into question their overall impact and financial sustainability. Farmer field schools have shown remarkable impact in terms of pesticide reduction, increases in productivity, knowledge gain among farmers, and empowerment. However, these effects have been generally confined to the most directly-engaged farmers, rather than demonstrating adequate capacity for scaling up for greater impact. The FFS themselves are undergoing reforms to address these issues, such as becoming self-financed (Khisa, 2007). However, some studies do show that FFS has limited or no effect on economic performance, the environment and human health, and farmer-to-farmer dissemination of information and technologies. For a review of impact evaluations of FFS, please see van den Berg and Jiggins (2007), who conclude that there was substantial immediate and developmental impact for participation in FFS.

Several reviews have been conducted of Ethiopia’s Participatory Demonstration and Training Extension System (PADETES), based on Sasakawa Global 2000’s (SG-2000) approach to extension that uses demonstration plots and links technologies to inputs through a package deal. Although 55% of respondents used the package, a good number of farmers later abandoned package components such as fertilizer or improved seed (Bekele, Anandajayasekeram, & Kisamba-Mugerwa, 2006). Extension workers saw their role mostly as distributors of fertilizer and credit rather than technical advisors. Other researchers found that agricultural extension, as well as other rural services, contributed significantly to agricultural productivity in Ethiopia (Ayele, Alemu, & Kelemework, 2005).

After initial (and favorable) qualitative reviews, Benin, Nkonya, Okecho, Pender, Nahdy, Mugarura, et al. (2005) conducted a quantitative assessment of Uganda’s decentralized, market-oriented,
farmer-centered National Agricultural Advisory Services (NAADS) in 2005. The study showed that NAADS had positive impacts on farm income and availability and quality of services. However, there was no significant difference in yield growth between NAADS and non-NAADS areas for most crops. At the same time, farmers in the NAADS areas did show less decline in income than in other areas due to adverse climactic conditions during that time. Shortage and timeliness of inputs were other problems in NAADS. A forthcoming piece on NAADS shows that there is a strong knowledge effect but that it does not translate into measurable productivity and income effects (reviewed in Anderson, 2007).

Kenya’s National Agriculture and Livestock Extension Programme (NALEP) was started in 2000. The NALEP approach, supported in part by Sida, focuses on stakeholder inclusion, bottom-up planning, and farmer common interest groups (CIGs) in focal areas. The first phase ran five years, and was evaluated in 2006 (Cueller, Hedland, Mbai, & Mwangi, 2006). Data were collected from project documents and interviews with farmers. The analysis shows that 80% of respondents said that the program offered new opportunities, and 70% said that they viewed farming as a business as a result of NALEP. Regarding sustainability, 70% of respondents claimed that NALEP assisted them to gain profits from their farms.

Finally, a study on the impact of extension in Mozambique showed that public and private extension had a statistically significant positive effect on rural livelihoods (ECON Analysis, 2005). Extension in Mozambique mainly focuses on introducing new varieties, promoting natural pesticides, and promoting commercialization. The study showed that access to extension increased farm production by 8.4%. Because only 13% of the rural population lived in villages with extension offices, one policy implication was the need to significantly extend coverage (and quality) of extension.

In summary, this review shows that evidence has been mixed on some of the major extension models in SSA, and that it is difficult to show impact for extension. There is also a lack of evidence of impact on some of the newer models, extension reforms, and pluralistic models that involve many different extension providers. In general, though, problems in extension systems were due to a combination of a lack of relevant technology, failure by research and extension to understand and involve clientele in problem definition and solving, lack of incentives for extension agents, and weak linkages among extension, research, and farmers.

Due to these complications, researchers at the International Food Policy Research Institute put together a framework for designing and analyzing extension (Birner, et al. 2006). The framework focuses on (a) the design elements of a system of extension—governance structures, capacity and management, and advisory methods—and their comparative advantages and disadvantages under different frame conditions; (b) performance measurement and quality management in the provision of agricultural advisory services; and (c) impact assessment with regard to multiple goals as well as assessment of the costs and the benefits of different ways of providing and financing extension. The framework—and indeed, this paper—call for a move from “best practice”—imported standardized models—to “best fit”—where location-specific, participatory, sustainable, “smart” models are used.

**Current Status of Extension in SSA**

The failure of many of these extension models to meet their goals effectively, coupled with limited budgets for supporting public extension, has led to the implementation of reforms in most SSA countries. Most African countries today are thus experimenting with reforms to existing...
extension systems. For instance, Ghana modified their extension system in 2003, based upon a 1997 policy to decentralize (Anderson, 2007). However, such modifications take a long time; hence, there is no information on its success.

Existing models are typically a general or modified T&V model housed in the Ministry of Agriculture, although many countries are using multiple models with pluralistic service providers (e.g., Nigeria; see Oladele, Koyoma, & Sakagami (2004)). Sasakawa Global 2000) works closely with extension and is currently working in Ethiopia, Mali, Nigeria, and Uganda. The SG-2000 program first searches for a pool of appropriate technology to be transferred and then works closely with the government using national extension workers.

These reforms are not changing the system used so much as the approaches within the system. Reforms include use of pluralistic extension providers and approaches, decentralization/devolution, privatization, contracting in and out, cost-sharing, demand-driven/participatory approaches, fee-for service, and use of information and communication technologies (ICTs). Qamar (2005) has developed a guide for policy makers for reforming extension systems.

Several systems provide for competition among extension providers, allowing for great accountability to farmers who can at times both hire and fire them. The NAADS approach has a certain competitive element, as do some FFS, where farmers have power to “fire” the extension agent if they are not pleased with the service.

Many countries are committed to participatory and pluralistic extension systems. How that takes place, however, is another matter. The increasing number of players and stakeholders makes the issues of coordination and regulation crucial, and underlines the need for the government to remain involved in extension. This includes ensuring food security, regulating food quality and safety, and environmental conservation, among others (Rivera & Alex, 2004).

According to Sasakawa Global 2000, there are about 150,000 extension workers in Sub-Saharan Africa from the private, public, and civil society sector. However, Swanson, Farmer, and Bahal (1990) reported that there are 58,958 extension workers in Africa, based on a survey done for FAO in the late 1980s. Data collected by the author supplement this information (Table 2).

It is apparent that little is known about the capacity, quality of service, and performance of extensions systems in SSA. This type of information is urgently needed to assess the strengths, weaknesses, and performance of extension, and to strengthen it to reduce rural poverty and to improve rural livelihoods. Unfortunately, despite calls for it, there has not been enough commitment to collecting these types of data on a regular basis.

Innovative Extension Approaches

Following the above review of the current status of extension in SSA, we move now into details of specific innovative approaches in use in SSA and elsewhere today.

Fee-for-service extension is provided for by the public (or another sector) and paid for by the farmers (Anderson & Feder, 2005). Small groups of farmers usually contract the services. This arrangement allows clientele to “vote” on programs and program scale by paying for them (Hanson & Just, 2001). Most of the examples of this model come from developed countries, such as New Zealand, which is completely privatized. In addition to providing feedback, fee-for-service also can provide additional sources of revenue to public extension. It is suitable for rival and excludable products. Hanson and Just argue that universal paid extension is not in the public interest, but that there is an optimal mix of public, private, and paid extension. A
problem with this type of extension service is that non-commercialized farmers may purchase fewer services (Anderson & Feder, 2005). One solution to this is to stratify farmers, allowing the commercial farmers to purchase services while smaller, poorer farmers are serviced by public extension.

Table 2

<table>
<thead>
<tr>
<th>Country</th>
<th>Current Model(s)</th>
</tr>
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<tbody>
<tr>
<td>Angola</td>
<td>Rural Development and Extension Programme; FFS</td>
</tr>
<tr>
<td>Benin</td>
<td>Participatory management approach; decentralized model; FFS</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>FFS</td>
</tr>
<tr>
<td>Cameroon</td>
<td>National Agricultural Extension and Research Program Support Project; FFS</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Model based on SG-2000 approach: Participatory Demonstration and Training Extension System; FFS</td>
</tr>
<tr>
<td>Ghana</td>
<td>Unified Extension System (modified T&amp;V); pluralistic with NGOs and private companies part of the national extension system; decentralized; FFS</td>
</tr>
<tr>
<td>Kenya</td>
<td>Pluralistic system including public, private, NGOs; FFS; stakeholder approach (NALEP): sector-wide, focal area, demand-driven, group-based approach</td>
</tr>
<tr>
<td>Malawi</td>
<td>Pluralistic, demand-driven, decentralized; “one village one product;” FFS</td>
</tr>
<tr>
<td>Mali</td>
<td>Modified T&amp;V; both private and parastatal services for cotton; FFS; SG-2000</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Government-led pluralistic extension; FFS</td>
</tr>
<tr>
<td>Nigeria</td>
<td>FFS; participatory; SG-2000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>Participative, pluralistic, specialized, bottom-up approach; FFS</td>
</tr>
<tr>
<td>Senegal</td>
<td>FFS; government-led demand-driven and pluralistic system; FFS</td>
</tr>
<tr>
<td>Tanzania</td>
<td>FFS; group-based approach; SG-2000; modified FSRE from Sokoine University of Agriculture’s Centre for Sustainable Rural Development; private extension; decentralized Participatory District Extension; pluralism</td>
</tr>
<tr>
<td>Uganda</td>
<td>Pluralistic; National Agricultural Advisory Services (NAADS) is demand-driven, client-oriented, and farmer-led; SG-2000; FFS</td>
</tr>
<tr>
<td>Zambia</td>
<td>Participatory Extension Approach; FFS</td>
</tr>
</tbody>
</table>

*Note. Ethiopia has dramatically increased the number of extension agents from approximately 15,000 to about 65,000 in the past couple of years as part of a major capacity building effort (Ministry of Agriculture and Rural Development, 2007).*
In Uganda, the government has been implementing the Plan for the Modernization of Agriculture. One component created in 2001 is the NAADS program mentioned above, which has the goal of increasing market-oriented production through empowering farmers to demand and control extension services. NAADS is an innovative public-private extension approach. The main components of NAADS include decentralization, outsourcing, farmer empowerment, market orientation, and cost-recovery (Anderson, 2007).

Farmer field schools were introduced into Sub-Saharan Africa in the mid-1990s. They are in place in at least 27 SSA countries (Braun, Jiggins, Roling, van den Berg & Snijders, 2005). FFS came from Asia, where they were developed to promote integrated pest management programs. In Africa, FFS are being used for a variety of activities, including food security, animal husbandry, and soil and water conservation. They are even moving beyond agriculture into health (HIV/AIDS) and other relevant rural topics.

FFS are a participatory method of learning, technology development, and dissemination based on adult-learning principles such as experiential learning. Groups of 20-25 farmers typically meet weekly in an informal setting in their own environment with a facilitator. The defining characteristics of FFS include discovery learning, farmer experimentation, and group action. The approach is an interactive and practical method of training, and empowers farmers to be their own technical experts on major aspects of their farming systems. Farmers are facilitated to conduct their own research, diagnose and test problems, and come up with solutions. Both to ensure sustainability and to enhance the sense of ownership and responsibility, FFS programs are encouraging cost sharing. In East Africa, self-financed and semi-self-financed schools are in place, and schools use commercial plots to repay loans to operate the schools. Group members may also cover the cost of travel of the extension staff.

As with many models worldwide, there has not been enough effort to provide hard evidence on the effectiveness of FFS. Most FFS programs rely on ex post evaluations, which are not able to provide rigorous results as to how the program compares to alternative programs or to the counterfactual situation of having no FFS. If there are data, they often remain in project documents and other grey literature, and the information is not available to stakeholders who could provide peer review and validation of the methods and results. Future studies would be aided by collecting baseline data, obtaining panel data, and using experimental designs.

A related concept to FFS is the farmer study circles. Study circles, much more informal than FFS, provide opportunities for group exploration and learning, to gain knowledge on whatever topic members decide. A group of people meet regularly, with no external “expert” (although resource persons may be called in or facilitators may guide the groups). Study circles allow a forum for people to learn and solve their own problems. The Swedish Cooperative Centre focuses on human rights, improved livelihoods, and increased incomes, and has developed at least 68 different study circle guides in SSA for issues ranging from crops to HIV/AIDS (www.sccportal.org). To date, an inventory has been conducted, but there have been no studies looking at the effectiveness or impact of study circles (Torsten Andersson, personal communication, 19 April 2007).

Other innovative methods are related to the rapidly-expanding information and communications technology sector. Although ICTs are used in extension in countries such as China, India, and Chile, Africa has lagged behind in harnessing ICT potential for extension and other rural development issues. However, some examples exist; for instance, in Kenya and Uganda, mobile phone services provide...
An Indian decentralized market-driven extension model that may provide insights for extension in SSA is the Agricultural Technology Management Agency (ATMA) Model, an attempt to increase farm income and rural employment (Singh, Swanson, & Singh, 2006). ATMA is meant to integrate extension programs across line departments, link research and extension, and use bottom-up planning procedures. Many judge it as a successful model of extension reform (Anderson, 2007). The authors outline four axioms essential to market-driven extension. These are (a) Don’t encourage farmers to produce without a market; (b) Use products that are easily transported; (c) Pay attention to agro-ecological conditions for crops; and (d) Diversify crops to avoid saturation.

There are also several innovative approaches in financing extension services. The creation of a Trust Fund (Ghana) and Basket Funding (Tanzania) allows for the pooling of funds and distribution to end-users based on demand. In both cases, stakeholder forums consisting of farmer groups bring together concerns for required services from either public or private bodies. Under the system, farmers are empowered to identify and use selected qualified service providers (Government of Kenya, 2005). Other potential methods include levies on export commodities, community-driven development funds (Guinea and Kenya), and contracting by the government (Mozambique) (Alex, Byerlee, Helene-Collion, & Rivera, 2004).

Furthermore, financing can come through decentralization, involvement of farmers’ associations and NGOs, contracting-out of extension services, public-private partnerships, privatization, and embedding advisory services in other types of contracts (Anderson, 2007). More information can also be found in the Agriculture Investment Sourcebook’s Module 3 (World Bank, 2005).

Future Prospects for Extension in SSA

This paper has shown that there is a wide variety of extension approaches and reforms in SSA today. Different programs have diverse goals and thus differing strengths and weaknesses. For instance, T&V, although financially unsustainable, proved effective in training agents and improving the management of the overall system. The PADETES/SG-2000 type of model in Ethiopia has proved effective in getting large numbers of farmers to adopt technology packages for maize. Farmer field school models have proven very effective at strengthening farmers’ capacity and empowering rural people.

Based on the current status of extension in SSA, it appears that pluralism is the future of extension in SSA, with a greater emphasis on demand-driven, participatory programs. Extension will have a greater focus on facilitation and access to markets through farmer group formation and ICTs. See Table 3 for various approaches and where they may work the best.

Because of the diversity of approaches (which mirrors the diversity in rural areas), extension agents in SSA (public, private, and civil society) will need special skills that go beyond the basic technical skills. Agents will need skills in group dynamics, marketing, and ICTs. More than ever, he or she will need to be a skilled technician who also is a broker of sorts, being able to connect farmers in their areas to markets and other institutions that are demanded by farmers.

Conclusions

It is important to understand the experience of different countries and different extension models to develop and implement more effective models for Sub-Saharan Africa countries. There is very little information in
the literature on current models and the number of public, private, and third sector extension agents on the ground. Data are also lacking to show the capacity and performance of various extension systems. This paper attempts to document past and present extension models, reforms, and numbers of extension agents. It then gives prospects for what the future extension models and extension agents in SSA will be like.

Unfortunately, there is no “best practice” for modifying extension programs, a magic model that can be standardized and implemented anywhere. This had been tried with Integrated Rural Development Programs, training and visit extension, and to a certain extent, farmer field schools. However, there are many good models with useful features that, when implemented in a flexible, participatory, and sustainable (“smart”) way that meets the unique frame conditions of different countries and farming systems, can lead to improved extension performance and positive impact that policymakers are looking for in Sub-Saharan Africa. Promising models include the farmer field school approach; the Indian ATMA market-driven approach; and pluralistic, demand-driven models that incorporate the use of information and communication technologies.

This paper has described the role of extension in Sub-Saharan Africa, and given a typology for types of extension, which includes the basic forms of public top-down, participatory, and private. An overview of the evidence base for successes or failures of various models was given. The current status of extension in various Sub-Saharan African countries was assessed, and new models were discussed. A framework for designing and analyzing extension systems was briefly described. Finally, prospects for the future of extension in SSA were discussed.

Table 3

<table>
<thead>
<tr>
<th>Approach</th>
<th>Where does it work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fee-for-service</td>
<td>High potential areas; capable public, private, and civil society providers</td>
</tr>
<tr>
<td>T&amp;V</td>
<td>Homogeneous areas; hierarchal and structured systems</td>
</tr>
<tr>
<td>NAADS</td>
<td>Available markets and market infrastructure; capable public, private, and civil society providers; decentralized systems; ability of farmers to pay; high social capital</td>
</tr>
<tr>
<td>FFS</td>
<td>High social capital; capable extension agents</td>
</tr>
<tr>
<td>ATMA</td>
<td>Available markets; capable research, extension, and other technical backstoppers; decentralized system; strong links between line departments</td>
</tr>
<tr>
<td>PADETES</td>
<td>Hierarchal and structured systems</td>
</tr>
<tr>
<td>ICTs</td>
<td>ICT infrastructure; enabling policy environment (e.g. low taxes on mobile phone usage)</td>
</tr>
<tr>
<td>NALEP</td>
<td>High social capital; available markets and market infrastructure</td>
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References


Beliefs, Barriers, and Benefits of a Faculty Abroad Experience in Mexico

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Abstract
Prior research has emphasized the need for international agricultural experiences for students. However, university faculty members have the ability to greatly impact students in their preparation to be global citizens if they have participated in international experiences. Qualitative content analyses of preflective and post-reflective questions were used in this study to determine beliefs, barriers, and benefits to participation in a faculty abroad seminar held in Mexico. The analyses of perceived changes indicated that (a) contacts and interest in collaboration with Mexican institutions were not as difficult as originally thought, (b) personal relationships were critical for international collaboration, (c) Mexico’s political climate was complex, and (d) all participants had a greater appreciation of the diversity of Mexican culture after participation. Data pattern analyses revealed that (a) Hispanics gained a greater appreciation of their own history and culture, (b) non-Hispanics felt that language was a barrier, and (c) traveling was more difficult for those with families/young children. Lack of funding for travel was a major barrier for the sustainability of long-term bi-national projects. Workload and time constraints were more common among Assistant Professors who had the added pressures of tenure and promotion. This seminar contributed to the internationalization of faculty by directly exposing them to the culture, history, government, business, and language of Mexico. Future studies to compare these results with other faculty abroad programs should be conducted.

Keywords: Faculty Abroad, Experiential Learning, Professional Development, International Competence
Introduction

Edgar, Edgar, Briers, and Lawver (2006) emphasized the importance of a global perspective for university students to prepare society-ready graduates. Zhai and Scheer (2004) indicated that there was a need for university programs to address global issues in colleges of agriculture. Study abroad was recommended to enhance cultural immersion for students. Other researchers have also emphasized the need for international agricultural experiences for students (Edgar, Edgar, Briers, & Lawver, 2006; Irani, Place, Lundy, & Friedel, 2004; Wingenbach, Boyd, Lindner, et al., 2003).

Agricultural and Extension educators are increasingly aware of the implications and importance of a global perspective (Harbstreit & Welton, 1992). The Committee for Globalizing Agricultural, Science, and Education Programs for America states the importance of “globally competent stakeholders, faculty and students in the U.S. food, agriculture, and natural resource sectors who live, compete, and work well in an ever dynamic and interdependent world community” (CSREES, USDA, 2004, ¶6). However, most research has focused on providing international opportunities for students. What about university faculty? How can faculty promote and encourage internationalization if they themselves have not been exposed?

Review of Literature

To provide operational definitions of the major themes of this study, a conceptual framework on beliefs, barriers, and benefits to faculty abroad experiences was examined. In an article in The Chronicle of Higher Education, Hall (2007) posits that most universities recognize the importance of international experiences. In fact, the U.S. House of Representatives has proposed the creation of a foundation whose goals would be to send 1 million students abroad every year over the next 10 years. Hall argues that as important as this may be, faculty members need this experience as well. Just as students abroad benefit most from a total immersion in cultural difference and the unpredictable, so too do faculty members stand to gain more from teaching at a different institution, with different students, in circumstances outside their academic comfort zone. (p. B20)

He goes on to include the additional benefits of broadening perspectives and speaking from experience in the classroom about cultural assumptions.

Özturgut (2007) reviewed the benefits of study abroad programs. These benefits include enhancing students’ worldview, increasing self-reliance and confidence, and providing higher levels of openness and flexibility. The author supports the argument that “participation in study abroad programs enhances academic, social and cultural skills of students, makes them aware of transnational issues, and makes them better leaders of tomorrow” (p. 44). It can be assumed that higher education faculty would reap the same benefits. “If we want more students to participate in study abroad programs, first we need to educate our faculty” (Özturgut, 2007, p. 44).

Abroad experiences impact an individual’s beliefs and values. Beliefs can be defined as “judgments of the credibility of conceptualization” (McLeod, 1991, p. 7). Dweck’s attribution theory includes personal beliefs about competence (1989). A belief about international competence is impacted both by affect and cognition. Participation in a study abroad program could promote international competence and internalize cultural concepts and attitudes.

A baseline study conducted by the University of Minnesota surveyed 224 faculty, advisors, department directors and department heads about their beliefs about study abroad (Tomsic, n.d.). Most faculty believe that study abroad is desirable or essential, that it is important to work with
people from different cultural backgrounds, it helps people to function effectively in another culture within their profession, and enhances knowledge of current international issues and affairs. Through study, teaching, or research abroad, faculty members can gain cognitive and affective competence to transfer to students.

Not all students or faculty can (or will) participate in abroad programs. In Missing the Boat: The Failure to Internationalize American Higher Education (1991), Goodwin and Nacht surveyed U.S. faculty about participation in international programs. The primary barriers found were declining funding, policies in regard to promotion and tenure, two career households, and American academic arrogance. Fulbright and international fellowships have declined, shrinking funding sources for international exchanges. Many U.S. institutions do not recognize or reward international work in promotion and tenure decisions at the assistant professor rank. Faculty members with young children are limited in their ability to study, teach or research abroad. Some faculty members believe that U.S. higher education is superior and even question the value of international programs. Without a desire or belief that international experiences (a) are valuable to career enhancement, (b) will not interfere with family, and (c) will not be a financial burden, participation is unlikely to occur.

Background on the Study Context

The Faculty Abroad Seminar (FAS), sponsored through the Office of Mexican and Latin American Programs at Texas A&M University, was developed to contribute to the internationalization of faculty by directly exposing them to the culture, history, government, business, and language of Mexico. The main objective of the seminar is for the faculty participants to bring relevant global perspectives back into the classroom. The program was designed to establish linkages with colleagues at Mexican Universities and related organizations, including designing collaborative research with Mexican counterparts. Faculty members apply to participate in a 10-day networking and culturally-rich experience. Over the last 13 years, more than 140 faculty members have participated in this program.

Purpose and Objectives

The purpose of this study was to determine (a) perceived changes in attitudes/beliefs, (b) expected gains, (c) actual benefits/opportunities, and (d) barriers of participation in the Faculty Abroad Seminar.

Methods

Qualitative research can be defined in general terms as "multimethod in focus, involving an interpretive, naturalistic approach to its subject matter...Qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 1994, p. 3). It uses data that are the participant’s and researcher’s firsthand experiences (Merriam, 1998; Moustakas, 1994). The approach “involves a return to the experience in order to obtain comprehensive descriptions that provide the basis for a reflective structural analysis that portrays the essences of the experience” (Moustakas, 1994, p. 13).

The researchers used a purposive sample consisting of faculty who participated (N=9) in the Faculty Abroad Seminar in May 2007. Data were collected using a modified version of preflective and post-reflective instruments (Edgar, Edgar, Lawver, & Briers, 2006; Elliot & Yanik, 2002; Radhakrishna & Dominguez, 1999). Preflection is a process of being consciously aware of the expectations associated with the learning experience...it increases the readiness capacity for learning from the experiences, thereby increasing the capacity to reflect upon the concrete experience and increase the
Preflection provides a bridge between thinking about an experience and actually learning from the experience. (Jones & Bjelland, 2004, p. 963)

Guiding questions on the preflection instrument asked about initial attitudes or beliefs about visiting Mexico and expected gains from participating in the program. The reflection instrument asked about post-experience attitudes or beliefs, barriers, and opportunities for participating in long-term international activities.

Respondents were coded by gender, (M or F), national origin (Hispanic = H; Non-Hispanic = NH) and a random number to ensure confidentiality. Some representative quotes in the findings section may also include professorial rank or title when data interpretation was impacted by these factors.

An open-coding content analysis was used to determine emerging themes and patterns based upon hand-written reflections by the participants (archival data). Data themes and categories were peer reviewed by the program coordinator and a 2007 participant of the program. The primary evaluator was also a past participant of the program and thus was familiar with the context. An audit trail of all responses by emerging categories is included in the results.

Results
In order to recognize patterns of change, the results will be discussed by preflection and reflection themes, followed by noted changes as a result of participation in the program. Categories are underlined for clarity. Representative quotes are included to provide vicarious description.

Preflection Categories
The first preflective question was about attitudes and beliefs prior to the trip. There were seven categories that emerged. Respondents believed that Mexico has a complex political structure with a conservative, patriarchal society (MH1, FH4, FNH6, MNH7, MNH8, FNH9). Comments like “I believe that it is a far more patriarchal society” (MNH8), “Mexico seems to be a ‘divided’ country with many political divisions as seen by the last election” (FH4) and “Mexico is a complicated country…too much partisanship complicates politics” (MH1) demonstrate this concept. A belief that collaboration is difficult (but can happen as a result of this trip) was expressed (MH1, FH5). “Scientific collaborations are difficult to establish…to establish collaborations entails huge commitments” (MH1). Related to this category was the impression that there was enormous potential for collaboration (MH1, MNH2, FH3, FH4, MNH7). “Mexico is a poor country with tremendous potential” (MH1) and “I believe Mexico is an untapped area” (MNH2) represent this view. Another respondent integrated the belief that they would establish collaborative relationships and ultimately benefit their students:

I believe that during my visit I will establish many good relationships with colleagues here from TAMU and with colleagues from Mexican universities. I also expect to learn a lot about the Mexican culture and the people from Mexico. It will be helpful for me to get closer to the Mexican people. It will help me with my interaction with my students and also for my work in the rural communities of Texas (FH5).

The participants in 2007 had diverse national origins (Mexico, Dominican Republic, Peru, Brazil, Philippines) with more than half fluent in Spanish. One was married to someone from Mexico. One participant expressed concern about the language barrier (MNH2). Others indicated some fear of security issues and social problems due to economic stratification (MH1, FNH6, MNH8, MNH2, FH4, FH5,
“Mexico is having huge security problems” (MH1) expressed this view. Further integration of the categories can be found: “My perception of Mexico City is that it is a dangerous place, especially for foreigners. I have some trepidation that they view us as arrogant & career driven” (MNH8).

Overall participants believed that the Mexican people were friendly with a rich and diverse cultural heritage (MH1, MNH2, FH3, FH4, FH5, FNH6, MNH7, MNH8, FNH9). Specifically music, art, language, food, dance, custom, pre-Hispanic, and Hispanic culture were mentioned. “I think the language is beautiful as well as the customs” (FH3) and “I think the people are warm and friendly” (FH5) represent this category.

The last two categories support a barrier expressed by Goodwin and Nacht (1991) of American academic arrogance. One participant believed that Mexico devalues education (MNH8): “I believe Mexicans in general do not value education as much as we do, particularly in science…I believe higher education is inexpensive but not accessible to the poor.” Others believed that the close proximity to the U.S. influences Mexican culture (FH5, MNH7). “The Mexican culture is rich, but I think there may be a lot of influence of the American culture in Mexico” (FH5) and “Very close ties to US. US remittances are very significant” (MNH7) represent this view.

The second prelection question addressed expected gains from participation in the program. There were five categories that emerged. Collaboration and contacts with Mexican colleagues was a prevalent category (MH1, MNH2, FH3, FH4, FNH6, MNH7, MNH8, FNH9). Some American arrogance (Goodwin & Nacht, 1991) was evident within this category with statements like “contribute to Mexico’s scientific development” (MH1) and “how higher education can be more accessible and raised in perception of Mexico” (MNH8). This category was closely related to the potential to learn more about and contribute to academic practices (MH1, MNH2, FH4, MNH8, FNH9). “A better understanding of business practices and training models…Most important, I hope to make lifetime contacts that will enable me to establish and maintain research/training and relational contacts” (MNH2). Another stated that “There is interest in my college to teach classes related to Latin America Planning & Development and I would like to explore data sources or possible teaching cooperation” (FH4).

Learning about the Mexican culture and university systems were expected gains (MNH2, FH3, FH4, FH5, FNH6, MNH8, FNH9). One respondent wished to “learn more about the people and the country and understand better the academic environment in Mexico with possible research opportunities…to learn key institutions and people there to advance my teaching & research” (FH4). Another participant noted she hoped to gain “research contacts…better proficiency in Spanish” and “publications/grants with faculty in Mexico” (FNH6). An integration of gains can be found in this quote:

Most importantly, a better understanding of Mexican culture—people, music, art, etc…Meeting faculty interested in global discussion, research, teaching of the Americas. Begin possible connections for student exchange or study abroad program, team-teaching opportunities, curriculum development…By the conversations I have and receptiveness of others…developing a curriculum @ TAMU that does not blindly celebrate the U.S., but rather thinks more critically about its historical place, cultural conception, and ethical/political responsibilities in Mexico and Latin America. (FNH9)
Faculty participants mentioned that by understanding the Mexican culture and higher education institutions, they were better equipped to attract students to programs at Texas A&M University (MH1, FH3, FNH9). Measurement of gains from participation included: “whether I can attract students to my program” (MH1) and “by the number of contacts, visits, presentations, etc. as well as meeting students who might be interested in studying at TAMU” (FH3).

An important component of the Faculty Abroad Seminar (FAS) was building collegiality across the university. Building meaningful and lasting relationships with the other faculty participants was an expected gain (MH1, MNH2, FH3). Hoping to “develop ties within the FAS faculty” (MH1) and “continue to network with my colleagues from FAS into the future” (MNH2) expressed this concept. One participant encompassed all categories with her list: “1. knowledge of Mexican culture; 2. knowledge of political system; 3. knowledge of the university system; 4. contacts for future travel/visits w/ students; 5. to get familiar w/ other faculty members; and 6. learn of the Higher Ed. system” (FH3).

**Post-Experience Reflection Categories**

Many of the same categories emerged in the reflection exercise about attitudes and beliefs after the trip. These can be compiled into five areas. Mexican politics pose a barrier to improvements represented a belief (MH1, MNH2, FH5, FNH6, MNH7, MNH8, FNH9) that supported the preflection about the complexity of the political structure. A respondent who is from Mexico stated “I believe that the political turmoil that we witnessed during this trip (protests, demonstrations) could have a negative impact on my colleagues’ perception about Mexico’s stability…I feel that Mexico City constitutes a very accurate example of Mexico’s wage disparity” (MH1). Another participant reiterated:

*I have discovered no one can really understand Mexico and Mexicans without understanding Mexico history and culture. This is such as passionate culture built on relationships and to miss this is to misunderstand Mexico...The Mexican people are very interested in relationships. I could not make a ‘cold call’ and expect the Mexicans to jump on board immediately.* (MNH2)

A participant expressed how a visit to the National Palace and the art of Diego Rivera made a lasting impression.

*When we visited the ‘Palacio Nacional’ and saw Diego Rivera’s mural on the stairs of the Palacio, I could see how the Mexican culture evolved, from its indigenous cultures to the Spanish invasion and later social revolution. Our trip reinforced all the aspects of the Mexican culture.* (FH5)

Part of the belief that Mexico is an incredible country came from interactions with the Mexican people. Their impression was that the people were friendly, hard working, and honest (FH4, FH5, MNH7). “I found hard working people willing to help foreigners in different ways…I also found very honest people who had been fair to me” (FH4). Another mentioned “hospitable people” (MNH7) as an attitude or belief.

There was no mention of security issues and the U.S. influencing culture in the post-reflection exercise. One participant felt that Mexico was “safer than I originally thought” (MNH7) and another mentioned “myths regarding safety in Mexico” (FH3) as a barrier. Language as a barrier was also mentioned, but will be included in the next section.

The next post-reflection question asked about internal or external barriers to participation in long-term international activities. Six categories emerged. These
were closely aligned with the work of Goodwin and Nacht (1991). Indication of professional rank or title is included in the representative quotes when relevant. Lack of funding to support travel (MH1, MNH2, HF3, HF5, MNH7, MNH8, FNH9) was the barrier most frequently mentioned. “Lack of funding to support travel and other components of international academic communication” (MH1) and “There is a lack of grants/contracts for international work in my area” (MNH2) were indicative.

University and departmental policies with regard to international collaboration (MH1, MNH2, HF3, FNH6, MNH8) was another barrier to participation in long term international projects. Tenure and promotion at research institutions focuses on refereed publication and research dollars (primarily with a national focus). One participant emphasized that you have to have an established research record for international collaboration, yet the greatest benefit professionally toward tenure and promotion is at the Assistant Professor rank.

Academics at public universities in Mexico are hampered by bureaucracy. Also academic researchers are closed to interdisciplinary/outside collaboration because of the “publish or perish” system. They are willing to work with you only once you are established (when the benefit is decreased). (MNH8, Assistant Professor).

Sometimes it is not just a lack of funding or policies that poses a barrier. It can also be a lack of mutual interest (FNH6, MNH8, FNH9). “Interest relative to other projects (effort vs. value)” (MNH8) and “lack of mutual interest by universities” (FNH9) were common expressions. Time constraints due to a heavy workload and difficulty in scheduling this type of work with other responsibilities were barriers to participation (FH4, FH5, MNH7, MNH8). One respondent stated: “The only barriers could be time-constraints I face as I am already involved in several projects; AND I teach 2 courses each semester & master’s and Ph.D. committees…P&T committees emphasize publications” (FH4, Assistant Professor). Time constraints are intensified when faculty have young children/families (HF3, HF5, MNH7). “I think that having small children might contribute as a barrier to prevent participation as it requires a lot of traveling and I don’t think I will be able to travel that much” (FH3). “The main barrier for me is that it’s too difficult for me to stay far from my children and husband for so many days” (FH5).

As mentioned previously, most of the participants spoke Spanish prior to the seminar. Those who did not speak Spanish felt they were missing out on the nuances of the culture and additional collaboration with Mexican colleagues. The language barrier (MNH2, FNH6, FNH9) was mentioned by only one participant in the prelection, but was emphasized by others after the experience. The duality of language and culture caused one participant to want to learn Spanish. “I realize more than ever the necessity of every U.S. citizen to become fluent in Spanish” (FNH9). Another stated: “Only four did not speak Spanish. Therefore there were many conversations between the group and questions to tour guides where the non-Spanish speakers were left out…I wish I understood Spanish; this is a real barrier for me” (MNH2).

The last question in the post-reflection exercise related to opportunities available for long-term international experiences. Two emergent categories were prevalent. The first related to the ability to apply for funding from the National Science Foundation equivalent in Mexico (CONACyt). It should be noted that these programs are specific to STEM careers (Science, Technology, Engineering, and Mathematics). Both of the participants citing these opportunities were Assistant Professors in the STEM disciplines (MH1, MNH8). The other participants felt that
there were other opportunities available for collaborative projects in research and teaching (MNH2, FH4, FH5, FNH6, MNH7, MNH8, FNH9). Some of the opportunities included fellowships/grants, sabbaticals, and exchange programs (MNH7, FNH9). One participant also reiterated an expected gain from the prelection: recruiting graduate students from Mexican universities (MNH8). Developing certificate programs or online graduate degrees could serve adult workers throughout Mexico (MNH2). Some had already been invited to return to give presentations or workshops and to plan an interdisciplinary conference (MNH8, FNH9).

**Analysis of Perceived Change (Preflection and Reflection)**

The primary objective of this research was to determine change as a result of participation in the Faculty Abroad Seminar. A summary of findings with a representative quote for each indicates that the participants believed:

a) Contacts and interest in collaboration with Mexican institutions was not as difficult as originally thought;

   “By talking with my Mexican colleagues, I realized that they were as interested as I was in bridging the cultural/political/scientific gap that separates Mexico & the U.S.” (MH1).

b) Personal relationships were critical;

   “I was surprised at the importance of personal relationships in Mexico. In the U.S., I can write a paper w/ co authors I have never met. In Mexico, this is unthinkable” (MNH8).

c) Mexico’s political climate was complex;

   “I think now I respect more the Mexican people and its culture…I now better understand the immigration problem, both from the US perspective and Mexican perspective…I also now feel more comfortable to engage in common projects with Mexican researchers and organizations” (FH5).

d) That they gained a greater appreciation of the diversity of Mexican culture.

   “I have been to many countries with distinct cultures but this experience has provided me a much deeper understanding of a country’s culture, traditions, and its people” (MNH7).

**Conclusions, Recommendations and Implications**

Faculty participants were asked to reflect on their attitudes and beliefs before and after the seminar. There was an initial belief that the educational system in Mexico would be inferior and not as competitive as the U.S. However, participants found the universities to be better equipped and receptive to collaboration and interchange. The initial “American academic arrogance” was noted in the work of Goodwin and Nacht (1991). Participants believed collaboration with Mexican institutions was not as difficult as originally thought. This could be related to the benefit of increasing levels of openness and flexibility as a result of participation in an abroad program (Özturgut, 2007). Özturgut found an awareness of transnational issues was a result of participation. This was supported by the Faculty Abroad Seminar participants in their belief that Mexico was more modern and safer than expected. The Faculty considered the political system to be complex but also believed it was a country of enormous potential and resources after participation in the program.

An important change after participation in the program was the belief that personal relationships were critical for collaboration. Museums and historical sites gave insight into the rich cultural heritage of Mexico. Based upon Hall (2007) faculty can broaden perspectives and speak from experience when they return to the classroom. Several faculty members mentioned their plans to bring this experience back to their students. Enhancement of academic, social and cultural skills (Özturgut, 2007) and gains in
international competence by enhancing knowledge of current international issues and affairs (Tomsic, n.d.; Dweck, 1989) were faculty benefits to participation.

An analysis of data patterns revealed that Hispanics gained a greater appreciation of their own history and culture (MH1, MH3, FH5). Non-Hispanics felt that language was a barrier to communication (MNH2, FNH6, FNH9). Traveling was more difficult for those with families/young children (FH3, FH5, MNH7) and a lack of funding for travel was a major barrier for the sustainability of bi-national projects as supported by Goodwin and Nacht (1991). Workload and time constraints were more common among Assistant Professors (FH4, FH5, MNH7, MNH8) who had the added pressures of tenure and promotion.

This seminar contributed to the internationalization of faculty by directly exposing them to the culture, history, government, business, and language of Mexico. The impact of a faculty abroad program has implications for incorporating global perspectives for teaching and research endeavors. Some of these implications and recommendations could greatly impact the sustainability of faculty abroad programs.

The research conclusions and the Essay in Education article by Özturgut (2007) support these recommendations. First, recognition of international collaboration for research projects should be supported in tenure and promotion decisions. Assistant professors who wait to participate in international projects may limit their research to domestic issues. Many of the problems facing our world today need interdisciplinary and multi-national solutions. Second, higher education institutions (and funding sources such as Fulbright) should encourage faculty sabbaticals abroad. Programs that support families (child care options, schooling, partner-placement) should be expanded. Third, as stated by Hall in the Chronicle of Higher Education piece, institutions should develop new programs dedicated to faculty abroad. This will take “financial creativity to ensure the modestly paid professors are not economically overburdened by the experience” (2007, B20).

This study was limited to the participants in the 2007 seminar. Further expansion of this research should include a review of the program impacts in teaching and research for all participants (1994-present). This information could serve as a broader evaluation of this program at Texas A&M University. A comparison study of other faculty abroad programs could provide substantiation of the findings and conclusions of this study.

In sum, we conclude with the inclusion of a quote by one of the 2007 Faculty Abroad participants on the program promotional materials:

>This opportunity has contributed to my growth as an academic within this institution. I hope that Texas A&M continues to support this program in the future since it is perhaps one of the best examples of the commitment of this university towards a greater internationalization of its faculty and, ultimately, its students.<

References


The Options for Farm Families Programme: Rhetoric and Reality of Change

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Abstract
Since the turn of the twentieth century, a rapidly changing rural environment has forced agricultural extension services to undergo readjustments and major restructuring in order to remain relevant and valuable to farming communities. Issues concerning public funding for extension services, along with a dramatic decline in farm income, a significant increase in part-time farming and the emergence of a new multifunctional type agricultural regime has forced the Irish extension service (Teagasc) to make significant modifications to their organisation, programmes and methods of delivery. One programme indicative of this restructuring is “The Options for Farm Families Programme” which adopts a holistic approach whereby extension advisers transfer knowledge and advice to farmers relevant to their future “options.” Drawing from an action evaluation of the Options Programme this paper explores the views and attitudes of programme participants, managers and advisers in relation to its delivery to farm family participants. Although many benefits of the programme are identified, what also becomes apparent are problems of programme awareness and levels of participation; the continued use of outdated paternalistic delivery methods and prescriptive rather than consultative structures under which the programme operates. Furthermore what emerges is the importance of appropriate “bottom-up” programme evaluation methods and the realisation that the willingness of farmers to explore their “options” is very dependent on the way in which knowledge is disseminated to the farm family and the levels of engagement at which the extension advisory service operate.

Keywords: Agricultural Change, Action Evaluation Research, Advisory Programme, Options for Farm Families Programme

Acknowledgement: This paper is based on work funded by the Teagasc Walsh Fellowship, Republic of Ireland. Based on these research findings, Teagasc management have begun the process of implementing a series of changes to deal with programme structure, programme delivery, reduction in workloads, and staff training. The programme will in the future be monitored by AUMs and evaluated on a regular basis to ensure that advisers are delivering the programme as intended.
Introduction

Rural restructuring has become an inevitable part of the modernisation of society and one of its most distinctive features in recent years has been the fundamental transformation of agriculture. In developed countries such as the United States, Canada, the UK, France and Ireland, agriculture has taken a ‘backseat’ to industrial development, construction, services and the communications and technology industry (Woods, 2005). While the Irish rural economy is no longer dominated by agriculture in terms of economic stability or employment, farming and farm families still maintain a crucial role and place in Irish society and in the desire for a living countryside (Department of Agriculture & Food, 1999).

The foremost drivers of change within Irish agriculture are the agricultural reforms of the European Union (EU) and the World Trade Organisation negotiations. The reforms initiated by these organisations in the last three decades have created a shift in agricultural practices from production to post-production and in turn to a multifunctional agriculture regime. In 2006, it was estimated that 54% of farmers held an off-farm job, while 48% of all farms received payments for their participation in a Rural Environment Protection Scheme (REPS) (Connolly et al., 2006). In addition, 16,600 farm families engaged in diversification activities in 1998, the most common of which included farm forestry, sport horse breeding, deer farming, amenity horticulture and production of goat’s milk (O’Connor et al., 2008). Although these statistics are not definitively portraying a regime of multifunctional agriculture they are suggesting that multifunctionality is gradually becoming a significant factor within Irish farming and rural communities. Within the EU and Ireland respectively, there has been intense debate about the future of farming; the role of agriculture within the countryside; the extent to which the sector will maintain support from the Common Agricultural Policy (CAP) and the EU; the future direction of rural development and, in the wake of such crises as BSE and Foot and Mouth, how to ensure food safety (Garforth et al., 2003). Such debate and intensity of change have brought into sharp focus the need for consistent and appropriate advice from agricultural extension advisory services, advice that is orientated towards multifunctional agricultural practices and advice that is able to assist the entire farming community to increase income and improve quality of life. This is particularly important in the Republic of Ireland where, in 2006, approximately 37% of all Irish farms had an income from farming of less than €6,500 (Connolly et al., 2006). In addition, data from the Central Statistics Office (CSO) of Ireland show that in 2005 the agri-food sector contributed to just 8.6% of GDP and 8.5% of total employment. When the sector statistics are further broken down to consider the role of agriculture alone, the contribution of the sector to GDP is approximately 2.5% in 2005, leading Hennessy (2008) to argue that Irish agriculture is a sector in decline.

Contextualised by this transition of change, the type, extent and applicability of advice and information that farmers receive is crucial to their future sustainability. Since 1988, this advice has been delivered in Ireland by the Agriculture and Food Development Authority and specifically, through their extension advisory services (Teagasc), a group that plays a vital role in ‘shaping modern agriculture’ and in particular the ‘practices of farm families’ (Bogue, 2005, p. 2). With a client base of over 40,000 farmers, out of a possible 130,000 throughout the Republic of Ireland, Teagasc has been considered a ‘leading light’ in the provision of technical farming advice (Phelan, 1998). More recently, however, it can be argued that there is an increased need for the agenda of extension services to shift from a focus on agricultural production to a broader range of services.
relating to marketing, environmental conservation, poverty reduction, rural development issues and off-farm activities (World Bank & Neuchatel Group, 2002). Teagasc attempted to meet this challenge through the provision of rural enterprise training and advisory services in the 1990s and through a new “Rural Viability” service in 2001 (O’Connor et al., 2008). However in 2005, further reform of their extension programmes and services were required following the introduction of the Mid-Term review of the Common Agricultural Policy and the introduction of the fully decoupled Single Farm Payment. Although this new environment created uncertainty within the farming community, according to Teagasc (2005) it also provided opportunities to develop new on-farm enterprises and to access off-farm employment, provided farm families were in possession of information, skills and attitude to grasp those opportunities. In an attempt to respond to this perceived need, in 2005 Teagasc devised a new programme, “The Options for Farm Families Programme.” This programme was designed as a more innovative approach to providing advice and information to farm families to help them make informed choices and successfully adapt to this rapidly changing agricultural environment. The Options Programme thus aims to promote the concept of a multifunctional agriculture regime and in so doing, to encourage the sourcing of income from both farming and non-farming activities. The programme is free of charge, and is available irrespective of farm size to both Teagasc and non-Teagasc clients.

Purpose
This paper illustrates the significance of a bottom-up approach to evaluation of extension programmes in determining the real extent of their success on the ground. It suggests that a programme such as Options, which is not built around more conventional and easily-identifiable measures, such as successful funding applications, must necessarily involve a more in-depth, qualitative approach, with a particular focus on the programme recipients in order to establish the degree to which it has fulfilled its aims and objectives. This paper thus provides an action evaluation of “The Options for Farm Families Programme,” whereby a number of concerns around the format, interpretation and delivery of this programme for the period 2006/2007 are revealed, and a range of challenges for both programme participants (farmers and their families) and programme deliverers (Teagasc management and advisory staff) are highlighted. The aim of this paper is to outline and discuss these difficulties, particularly in the context of management and advisers’ reactions to the evaluation results, the changes that have been recommended and those that have been implemented.

Conceptual Framework
A measure of the challenges facing extension advisory services is the rapidity and complexity of change within agriculture over recent decades. Such change has engendered a range of often competing interpretations and perspectives on the status and future direction of agricultural policies and practices. One of the most compelling conceptual debates to emerge in recent years has focused on the transition of agricultural regimes from productivism or intensive agriculture to post-productivism or extensive agriculture (Marsden et al. 1993; Halfacree, 1997; Ilbery & Bowler, 1998; ) and in turn to a multifunctional agriculture regime (Wilson, 2001). The productivist era, or the productivist agricultural regime (PAR), spanning a period from the 1950s to the mid-1980s, placed significant emphasis on intensive, industrially driven and expansionist agriculture, with state support primarily on output and increased productivity (Low et al., 1993). According to Bowler (1992a), the advancement of productivist agriculture was built on three dimensions intensification or the pursuit of
higher productivity rates through the increased utilisation of agri-chemicals and the substantial mechanisation of farms concentration or increased farm sizes and structures and specialisation or the investment, and concentration in one single crop.

By the beginning of the 1980s the PAR had became a victim of its own success as intensive agriculture led to over-production of food in many developed countries. In addition, inadequate environmental regulations within the agricultural community led to increased pressure from environmentalists who felt that the farming community were no longer ‘protectors’ of the land but were playing a significant role in destroying the countryside. By the mid-1980s increased productivity led to fundamental changes within the policy environment and a concerted effort to reduce farm productivity gave rise to what many authors termed the post-productivist agricultural regime (PPAR), (Cloke & Goodwin, 1992; Marsden et al., 1993). Ilbery (1998) defined it as involving a shift in agricultural policy from intensification to extensification, concentration to dispersion and specialisation to diversification. A policy of extensification, which included the removal and restriction of production subsidies, aimed to slow down production rates, thereby reducing the artificial inputs used by farmers and decreasing levels of environmental pollution. Such revised policy measures and the accompanying impact on farm incomes encouraged the agricultural community to seek new sources of income through different types of agricultural and non-agricultural diversification (Ilbery, 1998). On-farm investment and off-farm employment, conceptualised as pluriactivity (Kinsella et al., 2000), became a recognisable part of the PPAR and a possible method of sustaining the family farm.

The literature on agricultural change however identifies a certain reluctance to concede that productivist agricultural practices are a thing of the past and that we have entered an era of post-productivism. In a UK context, Wilson (2001) argues that there is a distinct lack of evidence to prove that all farmers have made a wholesale shift to post-productivism (see also Robinson, 2004). Consequently, the notion of a “multifunctional agricultural regime” has been put forward as an “alternative endpoint” that acknowledges that productivist and post-productivist action can occur simultaneously, spatially as well as temporally (Wilson, 2001; Potter & Burney, 2002; Wilson & Rigg, 2003).

Multifunctional agriculture has been defined by Burton and Wilson (2005) as a “territorialisation of agricultural regimes. This includes a) intensively farmed regions (mainly in lowland areas) geared towards the production of food and fibre output, b) post-productivist farming regions (mainly in lowland area) aimed at extensification, wildlife and habitat preservation, and c) sustainable countryside management, that also includes non-agricultural activity such as recreation and diversification” (p. 97). In contrast to post-productivism this definition does not abandon the production practices of the farming community; instead it allows such practices to co-exist with non-production practices, spatially as well as temporally. The practice of multifunctional agriculture acknowledges the significance and reality of the multiple roles assigned to agriculture, and in so doing acknowledges the role of the farming community in the implementation of such practices. Such a changing agricultural landscape provides the challenging context in which the extension advisory services must now operate.

**The Options for Farm Families Programme**

A major challenge is contained in the main objective of the Options Programme, that is, “to stimulate and support farm families in building the capacity of the farm household to increase income and improve
quality of life” whereas Cristóvao et al. (1998) suggest that predefined or vague programme objectives can create difficulties for advisory personnel and can be confusing for programme participants, the specific objectives of the Options Programme are more clearly defined and thus more measurable in terms of achieved outputs. These include the need to assist the farm family in examining their current situation, to identify their future needs, to examine all possible options both on-farm and off-farm, to draw up an Action Plan for the future, to identify critical advisory training and referral needs and implement a plan of action (Teagasc, 2005). A key intended feature of the programme is to achieve a high level of engagement between farm families and their adviser on a one-to-one basis, resulting in the development of a plan that identifies specific actions for that farm family in the immediate and longer-term.

In opting for a participative, discussion-based approach involving the adviser and family members, the Options Programme targets issues of central concern and explores potential options both on-farm and off-farm for the farm family. The male dominance of rural societies is well-documented and according to Ní Laoire (2002) is associated with the gendered nature of agriculture and traditional household structures (Whatmore, 1991; Brandth, 2002; Liepins, 2000). However, acknowledgement of the importance of other family members in the decision-making process is regarded as one of the core elements to the successful delivery of the Options Programme. These “Significant Others” or “Trusted People” (Errington, 1986; Ferreira 1997) are seen as valuable opinion sources within the farming family unit and important players in making decisions about future options.

In delivering the Options Programme the process is designed to be carried out by a local adviser through a very definite process of stage development. This involves an initial viability appraisal which allows the farm family to identify their main household concerns and to explore possible future options both on-farm and off-farm, which are then documented in a “Way Forward Action Plan.” The plan outlines specific aims and objectives that may generate additional income and improve the quality of life of the farm family. In addition to assistance from the adviser, the farm family can also be put in contact with other relevant agencies that could help realise the successful outcome of the Action Plan. In the final stage of the programme, the farm family implements the specific actions documented in their Action Plan and within twelve months the Teagasc adviser carries out a follow-up visit to ascertain the success or failure of the Plan.

Challenging a Paternalistic Model of Programme Delivery

In delivering advisory programmes, a number of key competencies are required of extension advisers. These range from interpersonal and communications skills to knowledge, planning and evaluation (Straw et al., 1996). In the context of a rapidly-changing multifunctional environment for agriculture, the ability of advisers to quickly adapt, to absorb new knowledge, to adjust their advice and its method of delivery, not only in line with their own changing situation, but in relation to the changing situation of farmers, is of crucial importance. In addition to new skills, advisers require a considerable ‘shift of mind-set’ and a much wider range of knowledge than required by earlier generations of agricultural advisers (Garforth et al., 2003). As “agents of change” (Carey, 2004) advisory services have a dual responsibility of not only effectively advising farm households but also showing the ability to change internally. This implies fluidity and reflexivity in terms of goals and objectives that are not just reactive to the changing policy environment but which also change proactively and attempt to influence the directions in which
policies might be headed. However, the evidence would suggest that rather than taking a reflexive approach to changing policy and operational circumstances, advisers tend to remain attached to traditional modes and procedures of advice delivery, many still rooted in a productivist agricultural policy era.

Van den Ban (1999) refers to the problems of introducing change in advisory attitudes and procedures, particularly in the face of long-standing beliefs and practices. From the mid-1970s to the mid-1980s the acceptable model of extension theory was the transfer of technology in a two-way communication mode in which farming systems research was pioneered by economists and agronomists, and farmers were often viewed as sources of information and technology (Haug, 1999). This model of extension according to Cristóvao et al. (1998), involved transmitting a technical agricultural message from “sender” to “receivers,” i.e. from those in authority, government planners, advisers or researchers to a farmer who was often uneducated and ill-informed. This has given rise over time to a strong paternalistic approach to advice-delivery, an attitude that the advisory services “know best,” and a hesitancy and reluctance to embrace the current participatory model of extension that is being supported and encouraged (Murray, 2000). On one level this student-teacher-like relationship has instilled an expectation amongst the farming community that advisory services will provide the answers to their changing situations (NAFES, 2005). On another level, the intensity of change and the need to assimilate new information at a rapid pace have placed many advisers in the invidious position of possibly being unsure of their knowledge base, yet carrying the weight of expectation from farmers to deliver solutions for them.

Van den Ban and Hawkins (1988) contend that extension advisory services are judged by their capability of transferring knowledge from researcher to farmer, advising farmers in their decision making, educating them on how to make better decisions, enabling them to clarify their own goals and possibilities, and stimulating desirable agricultural development. Similarly, Swanson and Samy (2002) suggest that one of the foremost tasks of a public extension system is human resource development that can equip medium and small-scale farmers to solve their own problems and respond to new opportunities. However as farms and rural enterprises become increasingly diverse the farming community requires knowledge and information that increasingly exceeds the traditional routine of promoting specific farming practices or technologies. Consequently a “one size fits all” approach (Garforth, 2003) has become less pertinent and is no longer a suitable method of disseminating valuable knowledge and information to farm families. All of this suggests that the “paternalistic” model of communication is not one that can meet the rapidly-evolving needs of the farming community. However, Cristóvao et al. (1998) indicate that extension advisory methods tend to retain a traditional model of communication. The situation is further compounded, when advisers remain “prescriptive” in their methods of delivery rather than encouraging the farm family to seek out a solution to their problem.

Consequently, if extension services are to remain valuable to the wider rural community they need to embrace a more participatory approach that involves information sharing and the acknowledgement that farm families have relevant opinions that need to be considered through a joint decision making process (National Agricultural and Forestry Extension Service, 2005). In terms of outcomes for the farmer, the successful delivery and implementation of an advisory programme cannot be the sole responsibility of extension advisers; they also have a responsibility to engage in dialogue and seek out suitable information and advice. In the
context of this research it becomes apparent, both of these issues are at work, namely, the farming community being predisposed towards expecting the answers to all of their problems and future needs, having “come to expect a definite recommendation from their adviser” (Van den Ban, 1999), and the delivery of a more participatory and inclusive type of programme is not that readily embraced by advisers.

Methods

This research was conducted in two phases. The initial phase was carried out as part of the National Farm Survey (NFS) which is designed to collect and analyse information on 1,016 selected farms (representing 115,000 farms throughout the Republic of Ireland). The NFS is a member of FADN, the Farm Accountancy Data Network of Europe; it surveys approximately 1200 farms nationally that are weighted to represent the total population of over 10,000 farms. The reason for using the NFS is that it gives a national picture of the current farming situation in Ireland, and the awareness of farmers.

Because the Options Programme is available to all, this generated data in relation to awareness of the programme among the farming community (both Teagasc clients and non-clients), reasons for participation and non participation, changes made on-farm and off-farm due to the farm families’ involvement in the programme, and changes made irrespective of programme participation. The second phase involved deliberately targeting Teagasc clients, by surveying three key groups directly involved in developing, delivering and participating in the Options Programme. These included a) 18 Teagasc Area Unit Managers (AUMs), responsible for the range and quality of services and programme within a particular region in the Republic of Ireland (100% response rate); b) 240 Teagasc extension advisers, the primary programme deliverers (In 2005, all advisers except Teagasc REPS advisers were charged with delivering the Options Programme), who play a crucial role in disseminating knowledge and information to over 40,000 farmers (40% response rate); c) the programme participants. The principle survey technique used with AUMs and advisers was a detailed postal questionnaire. Programme participants consisted of all farm families that were listed as having participated in the Options Programme from September 2005 to January 2007 (total of 5,038). To obtain a subgroup of this population a multistage sampling method was applied. A sample of eight counties within the country was first obtained, using the regionalisation arrangement negotiated by the Irish Government in the context of the Agenda 2000 Agreement. From within these, a random selection of 160 farm families was made, using the Teagasc Client Information Management System which provided the names and numbers of those farm families that were listed as having completed the Options Programme. All 160 farm families were interviewed on a personal basis either at their place of residence or through a phone interview if this was more suitable. Due to the nature of results emerging from the participants’ survey, the client list was revisited and rechecked on a number of occasions to ensure its validity. In addition, a number of participants were re-interviewed to verify initial results.

Findings

Extension services aim to bring about positive change on farms, in agriculture and in rural areas (Fulton, 2003). Consequently, the success of extension organisations is monitored and judged by the changes that are initiated at farm level. However, it is contended that extension programmes delivered by advisers have limited impact if they do not result in some ‘doing’ by the participants, as it is only then that true ‘knowing’ takes place (Clements, 1999). The Options Programme is driven by what the extension services have perceived as the needs of the farming community, as
opposed to being led by farmer demand, consequently, farmers are not incentivised to actively seek out the programme. The implication is that for demand-led extension services to be successful, they must be customised to the expressed demands of the clients or recipients of the service (Garforth, 2004). However, the reality of change within agriculture, and the predicted impacts at the national level have forced Teagasc management to implement a programme that they perceive as representing the current needs of the farming community, even though farm families are not seeking such a programme. Confirmation of this situation has come from a number of advisers, who stated that there was no demand for the programme. Reinforcing the contention that perceived need for extension services has to come from the ground up, one AUM expressed the opinion that “Uptake and demand from farmers is the missing ingredient rather than any deficiency in the Options Programme” (AUM, p. 14).

Testing for Programme Awareness
The Options for Farm Families Programme has been identified by Teagasc as “the umbrella for all other advisory programmes” (Boyle, 2005, p. 19), signifying the flagship nature of the programme to the advisory services. However, the importance of the programme to Teagasc as the key to meeting the needs of all farm families is not reflected in the level of recognition afforded it by the farming community. Of those participating in the NSF survey, 67% of respondents had never heard of the programme. Of greater concern was the fact that only 25% of farm families, identified by Teagasc as having participated in the programme, stated that they had any knowledge or awareness of the programme. Over 65% of respondents stated that they received advice from their local adviser while considering either on-farm or off-farm changes, however only 5% of these farm families received this advice while participating in the Options Programme. One farmer remarked: “I never heard of the Options Programme, although I may have gotten involved if I did” (F. 17), while another farm family stated that they “were involved in two programmes delivered by Teagasc and neither was the Options Programme” (F. 65). Another farmer commented: “I was in touch with Teagasc last year regarding an inheritance issue, and the adviser mentioned it then, but nothing further than that” (F. 43). This raises a number of serious issues around the level of recognition of the programme, which was clearly not as well-publicised amongst their target group as Teagasc may have believed. According to Fulton, et al., (2003) the availability of new advisory programmes needs to be continuously highlighted. Teagasc clearly failed to raise such awareness of the Options Programme and as a consequence, removed the possibility of encouraging reflection and decision-making by the farm family about their own future. This is contrary to one of the guiding principles of all extension programmes as discussed by Cristóvao (1998); the fact that local actors should be empowered to plan and implement their own improvements. Due to the fundamental changes in agriculture it is no longer possible for
advisers to provide farm families with simple recommendations, rather, extension agents should attempt to assist the family in deciding which farm system they prefer and how much risk they are willing to take (Van den Ban, 1999). In this regard, raising awareness of the programme would also serve as a longer-term benefit for advisers themselves, shifting the established tendency for farmers to wait for them to provide solutions, and encourage them to become more active participants in the decision-making process. Because the benefits of participation in the Options Programme are not immediately evident to the farming community, it is essential that farm families are led to the programme through the adviser or through a well-devised marketing process. The eventual success of the programme depends to a large extent on high levels of participation among farm families, however if they are unaware of the programme, continued uptake will be insignificant. According to Bogue (2004), a multifunctional type of advisory programme will fail to attract farm families to participate on their own initiative, therefore it needs to be ‘sold to them’ by the adviser.

**Participation or Not?**

Extension organisations currently face dual challenges of supporting market competitiveness for commercial agriculture operating in a global market whilst also addressing rural development issues (World Bank & Neuchatel Group, 2002). Teagasc has attempted to meet this challenge by devising the Options Programme, which adopts a holistic approach to farm adaptation and change, however, any measure of success is predicated upon a high level of programme acceptance and participation. The research findings do not reflect a high level of participation. Results from the National Farm Survey indicate that only 3.1% of farm families throughout the Republic of Ireland took part in the programme. Whilst these figures are highly significant, of more concern were the findings from the Options Programme participants’ survey. Of the total of 160 farm families surveyed, only 5% believed that they participated in the programme. Another group, comprising 25% confirmed that they had heard of the programme, but were adamant that they had not participated in it. One farmer stated: “I heard of the programme but I’m sure I never participated in it” (F. 97). Another respondent, a farmer’s wife, was confident that she was “on-top of all the information and advice they receive from Teagasc;” she was also certain that the family had never participated in the Options Programme (F. 17). This implies that 95% of respondents did not participate in the Options Programme, even though they were recorded by Teagasc as having taken part in it.

These stark results raise questions of accountability within the organisation and among extension professionals and lead to the conclusion that advisers themselves experienced difficulties in “buying in” to the programme, and this materialised into a particular type of interpretation, and subsequent implementation, of a range of intervention measures which reverted back to what farmers expected (i.e. tangible outcomes in the form of scheme applications, etc.), and what advisers felt comfortable in delivering. They did not, however, resemble the format of the Options Programme, and most importantly, they failed then to embrace the core ethos of the programme, which was to generate a breadth of decision-making via a participatory approach. With regard to participant failure to buy in to the programme, this is impossible if they are not aware of the programme to begin with.

**Farmer’s and Advisers’ Perceptions**

Along with obvious problems of adviser buy-in to the programme, another major weakness that emerged from the research was the fact that it failed to create a strong identity for the programme with farmers themselves. The reasons for poor
programme identity may be attributed to several factors: a possible perception on the part of farmers that the programme was specifically for farm families in financial difficulty; that it was for those who wished to consider making changes on-farm or off-farm; that the programme was of such little consequence to the farm family that when questioned about participation, they had forgotten that they participated in it. However, this latter potential explanation overlooks the fact that the basic requirement of the Options Programme was to draw up of an Action Plan between the adviser and the farm family. When implemented fully, in the format laid down in the programme guidelines, this constitutes an intensive and time-consuming task, providing the farm family with a definite plan of action for a five year period. It is to be assumed that it would be difficult to forget that such an exercise had been undertaken, or the subsequent document emerging from it being easily misplaced. According to 95% of programme participants an Action Plan had never been received by them. When advisers were questioned on this, the issue of workload was advanced as an explanation. One adviser stated, “I find it almost impossible to produce quality plans with over 200 clients that are demanding several different programmes” (A. 13). According to another adviser: “getting plans completed is only possible if advisers are given more time and fewer targets.” Irrespective of the reasons for poor programme identity and awareness, the overriding concern emanating from this research remains that the majority of individuals documented as having been involved in the programme had no recollection of having participated in it.

This finding becomes even more significant when coupled with the information that 52% of NSF participants stated that they actively sought advice from a Teagasc adviser when they were considering either on-farm or off-farm changes, and nearly 80% stated that they received excellent advice and help from their Teagasc advisor. This raises the inevitable question as to why these farm families were not introduced to the Options Programme as a method of delivering the advice they were seeking from their adviser. Implementing a new advisory programme requires the ‘buy-in’ and endorsement of all actors involved in programme delivery. However, only 5.9% of advisers and 6% of AUMs were of the opinion that the Options Programme was an excellent programme, while 41% of advisers stated that it was a good programme, in that the programme can achieve its stated objectives of increasing household income and improving quality of life. According to one adviser “the Options Programme has not received unmitigated acceptance as there is more urgent and specific work to be done” (A. 27).

Therefore, while Tucker (2000) suggests that in some cases the farming community may be “self-satisfied and complacent,” leading to a “top-down” approach being used by the adviser (p. 6), this approach fails to focus specifically on the client’s needs, preferences and abilities, in effect, reverting back to the paternalistic model of advice-giving. The outcome in this case was a below average take-up of the Options Programme and a failure to accept the ethos and concepts of the programme, which are based on a more inclusive, participatory model seeking to address the current needs of the farming community.

Davis (2006) provides some further answers, in that he argues that extension services can no longer operate from an educational paradigm that is based upon the simple provision of information to clientele. Today’s information-based society demands that value is added to information if extension is to survive (ibid). The delivery of the Options Programme has clearly posed a challenge for extension advisers, in that it implies moving away from a ‘preferred style’ of programme delivery, extending their range and adapting to new methods of information dissemination. Because the
conceptual approach behind the Options Programme is a new departure for Teagasc, and unlike any programme previously administered by the organisation, the method and approach of delivery require a change in mind-set. To embrace such a change means programme deliverers need to ‘buy-in’ to the programme and accept the ethos embedded in the programme. Only then can advisers be fully prepared and committed to engaging in new and diverse methods of programme delivery. Consequently, whilst one of the principal aims of this evaluation was to identify whether farm families had initiated or considered any changes as a result of participating in the programme, the almost complete lack of awareness of the programme that was evident among both non-participant (NFS) and participant farm families suggests a lack of this buy-in by deliverers, resulting in an outcome that has clearly fallen well short of the aspirational content of the programme aims and objectives.

Advisers’ Assessment of Programme Success or Failure

The objectives of the Options Programme were to assist farm families to realistically assess their current situation, to improve household income and improve quality of life. Van Den Ban and Hawkins (1988) argue that the “choice of objectives for an extension programme will be influenced by the opportunities its management can see for achieving the desired situation” (p. 209). The majority of AUMs (76%) were of the opinion that the Options Programme could achieve its objectives. According to one AUM, the objectives could be achieved by “working through a guided process that helps the farm family set out possible and realistic goals for themselves.” Similarly, 69% of advisers believed that the Options Programme could help farm families take a realistic look at their current situation, and nearly half of advisers (49%) were of the opinion that participation in the programme would improve the farm family’s household income. However, although the majority of AUMS and advisers were relatively content that the objectives of the Options Programme could be realised, the programme still did not achieve the “desired situation.” This was felt by advisers themselves to be related to a number of factors including issues of workload and targets. Although this may be the case, an examination of programme delivery discovered that 71% of advisers neglected to follow the stated guidelines in delivering the programme. According to one adviser “when I come across a situation suitable to the programme I would implement it in my own way.” Although advisers need to follow their own instinct in delivering extension programmes, it is also essential, for the ultimate success of the programme, that they follow the basic guidelines.

Issue of Staff Workload and Setting Targets

Kutilek et al. (2002) contend that concerns about an extensive workload and unclear priorities leave extension professionals experiencing a lack of job satisfaction and an additional feeling of being unappreciated, which in turn prevents extension professionals from delivering a successful programme. Successful extension programmes depend on adequate planning which should take into consideration the existing workload of all potential programme deliverers. According to Bogue (2005) existing workload should never be the factor that hampers the introduction of a new advisory programme. However, because the Options Programme is a priority programme within the organisation, prior to its introduction, staff workloads should have been examined and a timescale allotted to its delivery. In Bogue’s opinion “the excuse’ of workload needs to be removed, either it is a real problem and is dealt with by the organisation or it is determined not to be a real problem” (2005, p. 20).
In terms of it being a “real” problem, according to 40% of AUMs, and a larger proportion of advisers (59%), the biggest constraint facing the Options Programme in its attempt to reach the “desired situation” was staff workload/priority of workload. One adviser summed up the situation, with a suggestion that the problem lay in a degree of inadequate planning by management: “Advisers’ workload is the biggest problem with the programme and management will have to deal with this situation before the programme can move any further” (A. 56). This implies that initiation of the programme, from the top down, had not taken sufficient account of reservations that advisers may have had about its implementation on the ground. If advisers on the “front line” of dealing with farm families were in fact being asked to take on another responsibility without sufficient account being taken of existing workload, then implementation problems for a new programme could have reasonably been foreseen. This indicates a failure at management level to fully anticipate and take account of workload, and perhaps other, “buy-in” issues. It also signifies the importance of an open, participatory approach being adopted at all levels of the implementation process, which should include advisers. Otherwise, the result is an implementation process which becomes subverted in certain ways, whereby advisers, who are arguably also stakeholders in the programme, operate in ways that enable them to best manage their situation, and prioritise and protect their own interests. In trying to deal with the increased workload situation, many advisers “tagged” the Options Programme on to other programmes that they were delivering to the farm family. One adviser described this strategy as follows: “Due to time constraints I have completed the Options Programmes in 2006 based on the work I have been carrying out for farmers on Farm Waste Management Programmes, etc.” (A. 14). In a similar vein, a second adviser stated that: “The option programme is very good but I have no time to deliver it and because of this I completed my quota last year based around the Farm Waste Management Programme” (A. 82). In delivering the Options Programme in this manner, it could be argued that the programme has established no definite identity among the farming community. A number of advisers were of the opinion that many farm families failed to realise that they were taking part in a specific programme. In the words of one adviser “many farm families have completed this programme and I don’t think they are sure of what they completed” (A. 23). In light of these findings, although workload emerges as significant obstacle in the delivery of the Options Programme, it is also one that should have been considered in the planning stages of the programme.

**Issue of Targets**

The implementation of the Options Programme did clearly create discontent among staff in relation to workload, however, the research findings revealed that it was not the programme per se that created the difficulties, but the targets that advisers were expected to achieve. In retrospect, it may be possible to conclude that the organisation was overly ambitious in agreeing a target of 20,000 Action Plans to be completed within a set timeframe. According to one AUM “the programme is very good, however the target number of plans required does not allow for in-depth planning and follow-up due to the very large and ever expanding workload of advisers” (AUM. 11). In the words of another adviser “targets prevent this programme from being as good as it should be” (A. 88). It appears that an over-ambitious target has ultimately led to the delivery of a poor quality Options Programme that advisers themselves are not satisfied with, and farm families have no knowledge of having completed. Bogue (2005) suggested that the setting of targets can be both a positive and negative strategy. It can be positive in that it “focuses on the
task at hand and allows for proper planning’ however it can be negative in that ‘some viewed it as a further imposition on their already heavy workload” (p. 6).

Confidence Levels of Advisers

Until recently, and in line with the prevailing agricultural regime, advisory agents were required to deliver programmes that mainly consisted of high levels of technical advice and information that led to increased on-farm production levels. However, the changing nature of agriculture in recent decades has forced advisory services to provide a broader service for the farming community. The level of confidence and assurance with which advisers deliver a programme will impact greatly on the eventual success/outcome of the programme. Albrecht et al. (1989) maintain that all extension approaches can be classified as either production technology approaches or problem solving approaches. Production technology approaches are strongly geared towards increasing production targets among larger commercial farmers, and pay little attention to client-related problems. Problem-solving approaches place a strong emphasis on the farm family attempting to define the problem, with help and guidance from the adviser. Although this approach uses technical information and deals with viability issues, the socioeconomic considerations of the client are the programme’s central concern. The Options Programme required a problem-solving approach involving a strong consultative method of programme delivery, and very little, if any prescription advice.

This evaluation established that although advisers in general were relatively comfortable with all aspects of delivering the programme, those who described themselves as extremely comfortable were in the minority, and a significant proportion were uncomfortable with some aspects of delivery. For example, 28% of advisers reported that they were uneasy when dealing with family and household issues, while 29% were distinctly uncomfortable exploring new off-farm options. One particular advisor believed that he “did not have enough information on off-farm options,” and felt that he was “not qualified to give constructive advice” (A. 46). Another adviser stated that he had “no experience or training in many of the options available to the farmer” therefore he found it “difficult to explore these options” (A. 79). The central cause for concern here is the fact that many advisers felt that they have to provide the “solution” for farm families instead of “giving information” to them. The evidence suggests that many advisers still see themselves as responsible for providing “all the answers” indicating a clear need for them to alter this mindset, and instead allow farm families to take responsibility for finding their own solutions to their own problems.

As stated, the Options Programme presented a significant departure from the delivery format previously employed by Teagasc. This implied the need for training and information to ensure that all relevant staff, including advisers, were comfortable with the programme and that it would be successfully delivered. Training was thus provided for advisers and coordinators on the programme’s guidelines and operating details. Additional support was provided by an Options specialist, and a variety of other information resources were made available through the internal Teagasc staff website. This method of training and advice was ongoing throughout the delivery of the programme, however, in the course of this evaluation, a distinct level of dissatisfaction was detected among advisers in relation to the provision of training. According to one adviser “we have had no in-service training for a long time, making it impossible to keep up to date on all the possible options available to the farming community” (A. 93). Another adviser stated that “there is not enough information on options available and constant in-service training is needed to
ensure a certain level of comfort in dealing with ‘options’ issues” (A. 22). According to Carney (1998) to remain valuable to the wider rural community, extension organisations should pay particular attention to the provision of training and up-skilling of staff in areas such as social mobilisation and participatory rural appraisal. Birmingham (1999) argues that such extensive in-service training and pre-service education is imperative to assist extension advisers develop the skills, knowledge and attitudes necessary to meet an increasing set of diverse demands, while March and Pannell (2000) recognise the greater levels of skills and competencies required to deliver an increasingly diverse range of advisory programme ranging from technology transfer to facilitating capacity building. While this question of whether advisory staff have received sufficient training to implement the Options Programme is undoubtedly one that deserves attention, it is also important to be cognisant of the referral system built in to the programme, whereby advisers direct farm families to more specific professionals (be they forestry specialists or small business start-ups). On enquiring about the usefulness of this system, it was discovered that it was not successfully operated by management or advisers with links to additional rural agencies reportedly not properly put in place and advisers unsure if referrals would occur: “I never use this system as I don’t know who I am referring to outside of Teagasc” (A. 58). Another adviser commented that there needed to be a “link directly with a liaison person so direct contact is possible and follow up is possible as there is no real professional interaction to deal with issues to the end” (A. 82). What these comments indicate is that while a system may be desirable in principle, its delivery will be compromised if there is a lack of confidence by the programme deliverers in the process.

Conclusions

Two main issues emerge from this research. The first is the concept of planning. While Cristóvão et al. (1998) emphasise the importance of adequate planning as crucial, what this research has shown is a complete lack of awareness of this essential component. This is ably demonstrated in the emergent issues of staff workloads, stakeholder buy-in, an integration of top-down and bottom-up programme design. The second issue that emerges is the importance of appropriate “bottom-up” approach to evaluation. This is particularly illustrated in the case of this research, through the low level of awareness and poor levels of participation in the Options Programme.

Participation in extension advisory programmes must ultimately change people’s attitudes or behaviours, if these programmes are to have any meaningful impacts (Diem, 2003). In the case of those farm families surveyed, this evaluation was unable to provide any evidence of change as a direct result of their involvement in the programme, because so few were able to identify with having participated in it. What the evaluation did discover was an extensive lack of awareness among farm families of the Options Programme. Equally disquieting was the fact that only 5% of farm families that were recorded by Teagasc as having participated in the programme believed that they had actually done so. Such findings not only raise issues of accountability on the part of advisers, but have led to a severe curtailment of the evaluation process, in terms of not enabling any real examination of the programme’s success or otherwise for farm families, and in confining it effectively to the level of Teagasc managers and programme deliverers. Although devising and implementing the Options Programme illustrated a considerable degree of progressive thinking within Teagasc, to successfully implement such a vision requires the commitment of all programme...
providers. The evidence from this research clearly indicates that if programme implementation is prescriptive and not consultative, commitment at the collective level will not occur (Fulton et al., 2003).

As suggested by Bogue (2004), the success of a family-focused advisory programme is as much based on the process of the programme as the content. It is within the process that farm families are afforded the opportunity to appraise their own situation in addition to obtaining technical advice. However if the process and content of the programme are not adhered to, then farm families may not have an opportunity for discussion or for the inclusion of all family members. This evaluation discovered that programme participants were unaware of their involvement in the Options Programme, which ultimately implies that they were not afforded the opportunity to experience this process and the benefits it might have brought to them.

The role of advisers in delivering the programme also drew attention to a range of weaknesses inherent in the programme. These ranged from a continuing paternalistic attitude towards providing advice to farmers, reservations about their ability to provide the range of advice needed, the apparent failure of the referral service, and concerns about additional workload. These findings also indicate a breakdown in understanding and communication between management and advisory staff within Teagasc, and a lack of clarity around roles and responsibilities, leading to the widespread practice by advisers of simply “tagging” the Options Programme on to other, more prescriptive programmes. This “interpretation” of programme delivery also reflects an enduring adherence to traditional service delivery methods, which in itself would suggest a number of failures within the training strategies being directed towards advisory staff.

Recommendations and Implications
The multifunctional ethos underlying the Options Programme fills an identified need within the agricultural community, but few farm families will seek out the possibilities if extension professionals fail to ‘sell’ the programme. Successfully delivering a multifunctional programme requires forward thinking, and the full commitment of all concerned in its implementation. If, as Maguire (2000) argues, an ability to practice change needs to be faster and more decisive if organisations such as Teagasc are to survive as an influential force in agriculture and rural development, then the ultimate success of the Options Programme depends on Teagasc’s willingness and ability to address the problems identified as part of this evaluation. Among the more crucial of these is the need to improve the level of recognition and awareness of the programme amongst farm families. It is imperative that the practice of attaching the Options Programme to other programmes and services be discontinued, and that it be delivered according to the guidelines that were originally set out. This includes a retrenchment from the more traditional approaches used in programme delivery which requires (what is for some advisory staff) a significant change in approach. For some, this will necessitate a shifting from a paternalistic method of service delivery, to one that can embrace a more participatory model, and creation of a situation that empowers the farmer and other family members to become decision-makers in their own right. Reported difficulties with the system of referrals should also be investigated with a view to strengthening this support structure and clarifying for advisers the nature of interaction and level of support that they can expect.

Further, this shift in delivery mechanisms extends to managers. Extension managers have a responsibility to ensure that all programmes are delivered to the highest possible standards, and that advisory staff, at the front-line of programme delivery, are
supported and facilitated in this task. This means ensuring that operational issues relating to workloads, training, and questions relating to referral services, must be actively monitored on an ongoing basis. The findings from this research suggest that once the Options Programme had been devised and launched, management effectively withdrew from direct involvement in any aspect of its delivery. This led to the development and subsequent justification of a range of ‘managing’ or ‘coping’ strategies by advisers, which only served to weaken the programme. Management must therefore take a proactive role in monitoring the progress of the programme. The apparent reluctance on the part of advisers to raise concerns about workloads and perceived training deficiencies also indicates the need for management to explore in more detail the causes for a clear and in many ways inexcusable breakdown in communication between these levels of the organisation.

The findings of this research very clearly indicate the importance of evaluation as an inherent part of successful programme implementation. If implemented from the outset, effective evaluation measures enable problems to be discovered in the early stages of programme delivery. Cristóvão et al. (1998) strongly argue that lack of adequate planning and continuous evaluation is a major reason for the frequent failure of development projects and extension activities. Monitoring and evaluating of advisory programmes is vital in that it helps to build professional and organisational credibility, and both determine and support the degree to which participants achieve intended results (Diem, 2003). It is clear that appropriate “bottom-up” evaluation methods and monitoring are hugely significant for successful programme implementation. What is also clear from this research is the essential nature of adequate planning. Failure to put adequate time and resources into planning extension programme will ultimately result in poor programme delivery and unattained programme objectives. This research also highlights the need to “embrace error” Korton (1980) and the fact that evaluation is a process of individual and collective learning (Chaudhary & Tandon, 1984), which allows us to learn from our successes, but especially from our failures.

Further, this shift in delivery mechanisms extends to managers. Extension managers have a responsibility to ensure that all programmes are delivered to the highest possible standards, and that advisory staff, at the front-line

References


The Attitudes of Extension Faculty in Virginia Toward Globalizing Extension Programs

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Abstract

Agricultural experts have argued that, for the Cooperative Extension System to remain viable, they must address globalization issues through local Extension programs. The purpose of this study was to assess the attitudes of Virginia Cooperative Extension (VCE) faculty toward globalizing their programming efforts. The study also ascertained information related to VCE faculty’s current involvement in globally focused activities as well as barriers to globalizing programming efforts. The Web-based survey instrument used for this study included four sections: 1) Employee Profile, 2) Involvement in International Activities, 3) Attitudes toward Global Issues, and 4) Perceived Barriers to Globalizing Extension Programs. The target audience for this study was all VCE faculty members (N=332). Two hundred and six faculty members completed the online survey; 205 of the surveys were usable. This represents a return rate of 62 percent. The data revealed that 92 percent of the respondents were involved in international efforts within the past five years. The data also revealed an attitude mean score of 2.9 on a scale of one to four, with four being the most positive. Furthermore, the top two barriers to globalizing VCE programs, as identified by respondents, were “lack of financial support” and “not a programming priority.”

Keywords: International, Evaluation, Cooperative Extension
Introduction

In February 2002, the Extension Committee on Organization and Policy (ECOP) released a report entitled The Extension System: A Vision for the 21st Century. This report lists the “Impact of Globalization” as one of the six major challenges currently facing the Extension System. ECOP contended that Extension must provide leadership in demonstrating the local implications and potential consequences of global interdependence.

The United States is more interdependent on other nations than ever before. Recent international agricultural trade statistics help to put the growing impact of globalization into perspective. Between 1991 and 2001, U.S. exports of agricultural products increased by 24 percent, while imports jumped 59 percent (FAS, 2002).

Over the past several years, many state Cooperative Extension Services have taken inventory of their engagement on international issues, including barriers (real and perceived) to active participation in globalizing programs as well as staff needs for effectively engaging diverse audiences. Furthermore, in 2002, Cooperative State Research, Extension, and Education Service (CSREES), USDA, launched the National Initiative to Internationalize Extension (NIIE) that was designed to help states and the national Extension System with global programming for domestic audiences.

Virginia Cooperative Extension (VCE) actively involves 4-H youth in international exchange programs. However, it has not engaged in a coherent and proactive effort to globalize all program areas (e.g., Agriculture, Family & Community Sciences, and 4-H Youth Development). For VCE to remain viable in the 21st Century, agents, specialists, and administrators must buy into the relevance of globalization in local Extension programs. A positive attitude toward globalization and related information-sharing with program participants is indicative of the necessary buy-in within the organization. Yet, no systematic documentation exists to establish such attitudes toward globalization among VCE agents, specialists, and administrators.

Purpose and Objectives

The purpose of this study was to assess the attitudes of VCE faculty toward globalizing their programming efforts. The specific research questions addressed in this study were:

a) To what extent are Extension faculty engaged in globalizing their programming efforts?

b) What are the attitudes of Extension faculty toward globalizing programming efforts?

c) To what extent are the attitudes and behaviors related?

d) What are the perceived barriers to globalizing Extension programming?

Theoretical Base

Extension faculty must incorporate a global dimension into their educational programs if VCE is to remain a viable organization. Extension leadership should seek to understand and influence attitudes of faculty, which will lead to desired behaviors related to globalizing VCE programs.

Attitude Definition

Numerous definitions of “attitudes” have emerged over the past several decades. For example, Allport (1954) defines attitudes as “a mental and neutral state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s responses to all objects and situations with which it is related” (p. 45). However, the definition most relevant to this study is: “The beliefs, feelings, and action tendencies of an individual or groups of individuals toward objects, ideas, and people. An action tendency refers to a
disposition to respond in a certain way towards an object or person” (Hutt, et al., 1966, p. 401).

**Attitude Formation**

There are several theories regarding the formation of attitudes. Fishbein and Ajzen (1975) argue that processing information develops attitudes, and they arise from beliefs that people have toward the attitude object. Myers (1990) contends that most social scientists embrace the theory that attitudes are learned through socialization, conditioning, and exposure. Socialization suggests that attitudes can be acquired from others via social learning. Conditioning refers to learning through association (Baron & Byrne, 1994). For example, a supervisor who regularly rewards those who perform a certain behavior can influence other employees’ attitudes toward that behavior. According to Bornstein (1989), direct experience can be obtained from exposure to an object. He contends that the more familiar the object or behavior, the more we generally like it.

**Attitude Change**

In attitude change theory, persuasion is a key process to influence others (Petty & Cacioppo, 1986). Based on the Rational Model of Persuasion, beliefs, values, and motives shape attitudes, and attitudes impact behavior. Consequently, to change attitudes, persuasive messages must target the audience’s beliefs, values, and/or motives.

**Attitude/Behavior Relationship**

According to attitude/behavior theories, one’s attitude toward an object influences his or her behavior related to that object (Hogg & Terry, 2000; Ajzen, 1988). Other research suggests that an individual’s attitude toward performing a behavior can be impacted by the perceived potential benefits of pleasing others (e.g., supervisors) (Fishbein & Ajzen, 1975; Liska, 1984). Accordingly, Extension administrators’ explicit support for globalizing programming effort can impact the attitudes of Extension agents and specialists.

**Methods**

The target audience for this study was all faculty members (N=332) of VCE, including approximately 226 Extension agents, 88 specialists, six district directors, and 12 administrators. The Extension agents are located in 107 county and city offices throughout Virginia. The Extension specialists and administrators included in this study are housed primarily at Virginia Tech, Virginia State University (VSU), Agricultural Research and Extension Centers (ARECs), and 4-H Camping Centers.

The survey instrument in this study combined two surveys developed and employed by Barbara Ludwig in studies on Ohio Cooperative Extension. The Web-based survey for this study included four sections:

1) Employee Profile
2) Involvement in International Activities
3) Attitudes Toward Global Issues
4) Perceived Barriers to Globalizing Extension Programs.

The respondents’ current level of engagement was assessed by their participation in 14 different types of activities. For this study, respondents were asked to select from the following options that which best represented their level of engagement in each activity. Each response was assigned a value to allow an average score to be calculated for each respondent. The options included: 4 = Done in the past 12 months; 3 = Done more than one year ago, but less than five; 2 = Done more than five years ago; 1 = Have never done.

For the purpose of analysis, average scores were also calculated by job category and program area to determine if differences existed in the amount or types of activities in which employees were engaged. Respondents were also provided the opportunity to include other types of
international involvement that were not included in the list of 14 activities.

A Likert-type scale was used to assess the attitudes of the respondents toward globalization and the incorporation of a global dimension in their programming efforts. Scores ranged from one to four, with the most positive attitude represented by the value of four and the most negative attitude represented by the value of one. The respondents selected from the following options: 4 = Strongly Agree (SA); 3 = Agree (A); 2 = Disagree (D); 1 = Strongly Disagree (SD).

An average attitude score was computed for each employee included in the study. Scores were compared by job category and position. Respondents were also offered the opportunity to provide additional comments regarding their perception of globalizing Extension programs.

Finally, respondents were asked to identify potential barriers that would preclude them from incorporating a global dimension into their programming efforts. As in Ludwig’s (1999) study, respondents were asked to identify three of 15 potential barriers, which were most likely to prevent them from incorporating a global dimension into their programs.

A panel of experts from Virginia Tech and Virginia State University determined content validity. Reliability scores were calculated for the behavior (i.e. current involvement) and attitude sections of survey and yielded alphas of 0.86 and 0.87, respectively.

**Data Collection**

The survey instrument was setup as a Web-based survey using Virginia Tech’s online survey service (survey.vt.edu). Dillman’s (2000) Tailored Design Method was used for collecting data. First, the VCE Director included a letter of endorsement and an overview of the study, which was drafted by the researcher, in the weekly VCE electronic newsletter (Partners In Excellence). One week later, targeted employees received an e-mail from the VCE Director that restated the purpose of the study and included a link to the Internet survey.

Two follow-up efforts were conducted with non-respondents only. To identify non-respondents, the researcher included a statement at the end of the survey instrument requesting that respondents send a brief e-mail message to the researcher to confirm their completion of the survey. This approach allowed the researcher to identify those who had completed the survey, while not linking the respondent with his/her responses to the survey instrument. Those who completed the survey without sending a confirmation e-mail were included in the follow-up efforts.

One week following the original request, the first of the two follow-up efforts included a concise e-mail message as a friendly reminder. Three weeks after the original request, a second follow-up e-mail was sent, which reiterated the purpose of the study and included instructions for completing the survey.

For this study, non-response error was assessed using late respondents from the second (n=64) and third (n=31) reminders as surrogates for non-respondents. Using a t-test at the .05 level, no significant differences were found between early (n=110) and late respondents.

**Results**

Two hundred and six faculty members completed the on-line survey; 205 of the surveys were usable. This represents a return rate of 62 percent.

**Characteristics of Respondents**

The respondents to the study consisted of nine (or 4 percent) campus administrators, four (or 2 percent) district directors, 52 (or 25 percent) specialists, and 135 (or 66 percent) agents. The respondents to the survey closely approximated the proportion in the population for each group.
Agricultural and Natural Resources (ANR) faculty comprised more than half (56 percent) of the respondents, followed by 4-H (22 percent) and Family & Consumer Science (FCS) (16 percent) faculty, respectively. The data reflected a slight over-representation of 4-H faculty in the study compared to the group’s proportion in the organization. Representation of the other program areas in the study was proportionate to the groups’ representation within VCE.

The respondents included a balanced representation of males (53 percent) and females (46 percent). The largest group of respondents by age were faculty in their 50s (32 percent), followed closely by faculty in their 40s (29 percent) and 30s (24 percent), respectively. Eighty-four percent of the employees had obtained graduate-level degrees. Finally, the majority of the respondents classified themselves as non-minority (88 percent).

Current International Engagement

Ninety-two percent of respondents reported some involvement in international efforts within the past five years. “Exchanged ideas with colleagues from other countries” and “hosted an international visitor” were the top two activities performed by faculty. On a scale of one to four, with four representing the highest level of engagement, campus administrators (mean=2.66) and specialists (mean=2.13) were the most involved in international programming efforts; the least involved were the district directors (mean=1.21). Additionally, ANR faculty (mean=1.86) exceeded the 4-H (mean 1.68) and FCS (mean = 1.38) faculty in their international efforts.

Attitudes toward Globalizing Extension

The overall mean score for attitudes was 2.9 on a scale of one to four with four being the most positive. This score represented an overall positive attitude toward globalization and VCE internationalizing their efforts. Campus administrators (mean=3.0) were the most positive of the four position categories; agents were the least positive (mean=2.86). Regarding program areas, 4-H faculty (mean=2.94) revealed the most positive attitude. FCS faculty followed closely with a mean score of 2.92. Agricultural and Natural Resources faculty (mean=2.86) held notably less positive attitudes than other program areas.

In Ludwig’s (1993) attitude study, she conducted a factor analysis that resulted in four dimensions. Ludwig provided the following labels for the dimensions:

1) Assistance to less developed countries
2) International trade
3) Other cultures
4) Extension involvement in global education.

Virginia Cooperative Extension faculty’s attitude toward “other cultures” was the most positive of the four dimensions with a mean score of 3.09. The lowest mean score (2.81) was related to “Extension’s Involvement in Global Education.” This dimension included two attitude variables that assessed the priority that VCE leadership placed on globalizing Extension. These variables were not included in Ludwig’s 1993 study. When these two variables are removed, the mean score for this dimension jumps from 2.81 to 2.89 (see Table 1).
Table 1  
*Attitude Variables by Dimensions*

<table>
<thead>
<tr>
<th>Attitude Dimensions</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimension 1: Assistance to Less-Developed Countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less-developed countries will be important customers for US agricultural within the next five to 10 years.</td>
<td>2.91</td>
<td>0.74</td>
</tr>
<tr>
<td>In the poorest countries of the world, agricultural growth will be necessary to provide the poor with more purchasing power.</td>
<td>3.02</td>
<td>0.70</td>
</tr>
<tr>
<td>US agricultural assistance to less-developed countries creates new competition and undercuts American farmers in the international market.*</td>
<td>2.67</td>
<td>0.73</td>
</tr>
<tr>
<td>Increased agricultural production in less-developed countries coincided with their increased demand for agricultural imports.</td>
<td>2.66</td>
<td>0.55</td>
</tr>
<tr>
<td>One of the major obstacles to economic development in poor countries is that there are too many people who do not work hard enough.*</td>
<td>3.36</td>
<td>0.62</td>
</tr>
<tr>
<td>The solution to the world hunger problem is to severely limit the population growth in poor countries.*</td>
<td>2.90</td>
<td>0.68</td>
</tr>
<tr>
<td>Trying to help starving people in the world is counterproductive because so much of the food we give never reaches the people in need.</td>
<td>2.82</td>
<td>0.71</td>
</tr>
<tr>
<td><strong>Dimension 1 Mean</strong></td>
<td><strong>2.9</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimension 2: International Trade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. responsibility extends only to its own farmers.*</td>
<td>3.07</td>
<td>0.70</td>
</tr>
<tr>
<td>We must stop giving away America’s technology to other countries.*</td>
<td>2.95</td>
<td>0.72</td>
</tr>
<tr>
<td>If the United States helps other countries grow more agricultural products, those countries will import fewer agricultural products from the United States.*</td>
<td>2.64</td>
<td>0.63</td>
</tr>
<tr>
<td>In the future, the U.S. should not assist countries in producing agricultural commodities if those same countries are producing commodities that compete with the U.S. on world agricultural markets.*</td>
<td>2.75</td>
<td>0.66</td>
</tr>
<tr>
<td>One of the main U.S. agricultural problems is that we have too many cheap, subsidized foreign agricultural products flooding the U.S. market.*</td>
<td>2.56</td>
<td>0.68</td>
</tr>
<tr>
<td>Small and medium sized American businesses can become effective participants in the global markets.</td>
<td>3.00</td>
<td>0.51</td>
</tr>
<tr>
<td><strong>Dimension 2 Mean</strong></td>
<td><strong>2.83</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimension 3: Other Cultures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American farmers do not need education from Extension faculty on global issues.*</td>
<td>3.20</td>
<td>0.55</td>
</tr>
<tr>
<td>Citizen exchanges between countries improve the ability of participants to understand and care about how other people live.</td>
<td>3.29</td>
<td>0.52</td>
</tr>
<tr>
<td>Getting to know people from other cultures is a good idea, but little ever comes of it.*</td>
<td>2.90</td>
<td>0.65</td>
</tr>
<tr>
<td>Our customs, beliefs, and values should be used as models by other countries.*</td>
<td>2.88</td>
<td>0.69</td>
</tr>
<tr>
<td>Extension faculty can learn from the culture and technology of other countries.</td>
<td>3.33</td>
<td>0.49</td>
</tr>
<tr>
<td>Citizens of the United States are ignorant of world affairs.</td>
<td>2.77</td>
<td>0.69</td>
</tr>
<tr>
<td>The large number of foreigners in the United States is a primary reason for the high jobless rate among American citizens.*</td>
<td>3.13</td>
<td>0.58</td>
</tr>
<tr>
<td>Global interdependence is a myth.*</td>
<td>3.18</td>
<td>0.54</td>
</tr>
<tr>
<td><strong>Dimension 3 Mean</strong></td>
<td><strong>3.09</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Table 1 (continued)

<table>
<thead>
<tr>
<th>Dimension 4: Extension Involvement in Global Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension faculty should not be involved in helping farmers from less developed countries to improve production practices</td>
</tr>
<tr>
<td>Extension can help Virginia citizens understand rationale the for supporting agricultural development in less-developed countries.</td>
</tr>
<tr>
<td>Involvement of Extension faculty in development projects to support poor countries can improve their ability to help local clientele.</td>
</tr>
<tr>
<td>Extension faculty should receive training to become more knowledgeable about global marketing.</td>
</tr>
<tr>
<td>Extension should develop programs to educate America’s farmers, agribusinesses, and rural leaders about competing in the global marketplace.</td>
</tr>
<tr>
<td>Extension professionals do not have the expertise to help clientele understand global interdependence.*</td>
</tr>
<tr>
<td>Extension faculty in Virginia have a role to play in helping clientele understand global issues.</td>
</tr>
<tr>
<td>International study tours sponsored by Extension would increase clientele awareness of global issues.</td>
</tr>
<tr>
<td>Extension faculty should focus on local problems.*</td>
</tr>
</tbody>
</table>

| Dimension 4 Sub-Mean (for comparison with Ludwig’s study) | 2.89 |

<table>
<thead>
<tr>
<th>Items added to dimension 4 for this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension faculty in Virginia are rewarded for their international programming efforts through the continued appointment/tenure and promotion system.</td>
</tr>
<tr>
<td>The leadership of VCE does not expect faculty to address global issues in their programs.*</td>
</tr>
</tbody>
</table>

| Dimension 4 Mean | 2.81 |

*Note. Strongly Agree = 4; Agree = 3; Disagree = 2; Strongly Disagree = 1; * = Reverse codes*

### Attitude/Behavior Relationship

A simple linear regression was conducted to assess the relationships between attitudes and behaviors (i.e., current activities). The mean scores for the attitude items were the independent variables and the overall mean score for the behaviors was the dependent variable. The R-squared was 0.365, which means that 37 percent of the variance in behavior is explained by attitudes. This score supports the literature, which suggests that attitudes influence behavior. However, the score does not represent a strong or causal relationship.

### Barriers to Globalizing Extension

The top two barriers to globalizing VCE programs, as identified by respondents, were “lack of financial support” and “not a programming priority.” Both barriers were selected by 47 percent of respondents. “Lack of time” was the third largest barrier being selected by 41 percent of respondents.

“Not Recognized in Promotion Criteria” and “Fear of Negative Career Impacts” were not considered substantial barriers with each being selected by only 5 percent of all respondents. Additionally, only 6 percent of all respondents selected “Lack of Support from Colleagues” as a barrier.

### Conclusions and Recommendations

The results of this study point to several conclusions and recommendations, especially regarding leadership, training, and barriers that are highlighted in this section.
Leadership

The results of this study suggest that VCE leadership recognizes the impact of globalization on Virginia’s local communities as well as the need to share expertise and resources across international borders. Thus far, however, the leadership’s involvement in global education has not transcended to the programming faculty at the grassroots level.

According to the data, programming faculty also recognize the need to globalize VCE and are willing to move in that direction. The problem appears to be a lack of direction from leadership on the level of priority to be placed on globalization efforts. That is, VCE leadership has not established clear performance standards or provided faculty with globalization-related training.

Again, attitude formation theory suggests that attitudes toward a behavior can be influenced by the perception that the behavior is important to a significant other. VCE leadership must clarify whether incorporating a global dimension into programming efforts is a priority, specify which aspects of globalizing are priorities, and identify and mobilize resources (e.g., training, funding, and human resources) to support this organizational initiative. A starting point for VCE leadership and programming faculty might be to build a consensus on the meaning and key components of a globalized Extension system. The following definition, which was used for this study, could serve as a model:

Globalizing Extension is engagement with American audiences around global issues, interdependence, and the critical role that Extension can play in today’s world, both domestically and abroad. This concept includes 1) incorporating global content into Extension programs; 2) tailoring Extension programs to address the ethnic diversity of local communities; and 3) using local Extension resources to assist in addressing needs in other countries. (CSREES, 2003; ECOP, 2002; Ludwig, 2002)

Although the phrase “globalizing Extension” is used in this study, it is recommended that VCE leadership use “internationalizing Extension,” which has become the common terminology used by USDA.

VCE leadership should also consider expanding the International Service component of the College of Agriculture and Life Science’s Faculty Annual Report to incorporate the globalization of local programming efforts. Attitude formation theory suggests that conditioning can shape attitudes. That is, if leadership holds faculty accountable for globalization efforts through the formal performance review process, faculty are likely to develop a more positive attitude toward globally focused programming efforts.

Considering current budget constraints, it might behoove VCE leadership to begin educating stakeholders on VCE’s role in addressing issues related to globalization and, eventually, include a globalization element as a line item in state and local budgets. This strategy will ensure that the necessary resources are available for training, travel, and curriculum development to support globalization efforts.

Training

Ludwig drew the following conclusion from her 1999 study of Ohio Extension faculty: “If Extension educators have the responsibility to help clientele develop a better understanding of the complexity of global issues, professional growth and development opportunities must be initiated for Extension staff” (p. 66).

The attitudes of faculty toward globalizing VCE were positive. However, the written feedback from respondents revealed a need and desire for training. VCE faculty need guidance on what a “globalized
program” looks like, including specific ideas that can be incorporated into their programs.

Faculty were also concerned about the lack of time for including this “extra dimension” into their responsibilities. Therefore, guidance is also needed in setting priorities and understanding how to manage this important element of programming. Finally, some faculty are interested in very specific training such as foreign languages that will enable them to be more engaged with diverse cultures.

VCE leadership should tap the vast resources available through USDA and other state Extension systems that are already heavily involved in globalizing Extension. As mentioned previously, The National Initiative to Internationalize Extension has created a national network of expertise, training resources, and funding opportunities to support states in their efforts to address the ubiquitous issues associated with globalization.

Barriers

The comparisons of the overall attitude mean scores to that of dimension four are quite instructive. Faculty who possess a positive attitude toward globalization, but a significantly less positive attitude toward VCE’s involvement, are limited in their effort primarily by the “barriers” (time, resources, etc.) they face. VCE leadership must reduce or eliminate these barriers (real or perceived) so faculty can be motivated to succeed at globalizing their efforts. Faculty with similar scores for both overall attitude and that of dimension four either see the value of globalization and support VCE’s involvement, or they don’t see the importance of globalization and do not support VCE’s involvement.

Some of the critical barriers highlighted in this study, as well as in Ludwig’s (1999) study, were the lack of time, resources, and expertise. Several state Extension systems, such as Indiana (Purdue University), have developed International Extension Coordinator positions to address these potential barriers.

VCE leadership should consider creating an International Extension Coordinator position. The responsibilities associated with this position would include coordinating relevant training, organizing international study tours, identifying opportunities for international collaboration, and procuring outside funding for international activities.

References


Going Global with Extension: Barriers to the Adoption of a Web-Based Resource

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Abstract

The emergence of the Internet as a tool for extension systems worldwide offers previously unimagined opportunities for collaboration and resource sharing. This descriptive study examined the diffusion of a Web-based resource which, if successful in the country of its development, may ultimately be expanded into the first global network for extension. Specifically, the study determined the perceptions held by extension agents with regard to the potential barriers to the adoption of eXtension, a Web-based educational resource. A random sample of 237 agents was selected to complete an online survey instrument which measured their perceptions of five potential barriers: (a) concerns about time, (b) concerns about incentives, (c) financial concerns, (d) planning issues, and (e) technology concerns. Agents tended to somewhat agree that concerns about time, concerns about incentives, planning issues, financial concerns, and technology concerns were potential barriers to adoption of eXtension. The capacity of Cooperative Extension to address and decrease these barriers will be critical determinants for the future success (or failure) of eXtension on both local and global levels. The lessons learned from this study may prove particularly educative for extension systems which have not yet developed their own Web-based resources, as the results point towards a need to pro-actively prepare extension workers with adequate training opportunities and technological resources prior to the launch of the innovation in order to minimize perceived barriers and maximize diffusion.

Keywords: Adoption, Diffusion, Technology, Web-based, Extension
**Introduction/Theoretical Framework**

A recent technological innovation developed by the U.S. Cooperative Extension Service represents the organization’s renewed commitment to making research-based information available to everyone, everywhere, all the time. The innovation is a Web-based resource known as eXtension (pronounced e-extension). eXtension is a repository of multimedia learning modules containing educational information based on research conducted by land-grant universities in the U.S. Although the content has been developed by American researchers and extension educators, eXtension is available to anyone with an Internet connection, anywhere in the world. eXtension was developed to (a) increase the economic efficiency of the current extension model by eliminating redundant educational efforts, (b) increase profits, (c) raise consumers’ awareness of extension, and (d) provide an instantly accessible information resource to increase customer satisfaction (Accenture, 2003). In short, eXtension could be the key to increasing the relevance of extension for future generations of Web-savvy clientele.

The emergence of the Internet as a tool for extension work is not limited to the United States. Dolly and Kissoonsingh (2006) found extension agents in Trinidad and Tobago preferred to access Internet sources for information about current farm matters over television. In Ghana, Information Communication Technologies (ICTs) – which include E-mail and the Internet – are highly regarded by extension agents as tools for agricultural and rural development (Annor-Frempong, Kwarteng, Agunga, & Zinnah, 2006). Similarly, the importance of ICTs for agricultural extension is gaining recognition with extension specialists in Iran (Hedjazi, Rezaee, & Zamani, 2006). The failure or success of the eXtension model may provide useful information for the development, adoption, and diffusion of similar innovations in other countries.

The theoretical framework for this research was based upon Rogers’ (2003) theory of the diffusion of innovations. Rogers’ theory states innovations diffuse through a social system over time. The rate of diffusion for an innovation is related, in part, to how potential adopters perceive the innovation’s characteristics. There are five characteristics which influence how rapidly an innovation is diffused into a social system: relative advantage, compatibility, complexity, observability, and trialability (Rogers). Of these five, relative advantage and compatibility are considered to have the most influence on the rate of adoption (Rogers). Innovations that are perceived by individuals to have low complexity, with high relative advantage, compatibility, observability, and trialability, diffuse most rapidly. Certain factors, often called barriers, can negatively affect any of the perceived characteristics of an innovation and the speed with which it is diffused. Participant adoption increases when barriers and inhibitors are eliminated (Schifter, 2000).

This study focused on eXtension, which is an emerging innovation. No published studies about eXtension were found in 2007, when this research was conducted. Studies of the diffusion of distance education in higher education and studies of the diffusion of technologies related to eXtension among extension agents were reviewed for germane findings.

A review of the literature found a substantial amount of research regarding barriers which may prevent faculty in higher education from adopting distance education (e.g., Curbelo-Ruiz, 2002; Kuck, 2006; Porter, 2004). Maguire’s (2005) synthesis of the literature found a number of common barriers identified in multiple studies, such as a lack of faculty time and compensation, technical expertise, concerns about workload, and lack of funding. Maguire
proposed dividing barriers into three categories to derive clearer meaning from the many barriers perceived by faculty: intrinsic, extrinsic, and institutional. Extrinsic barriers were associated with the institution. Intrinsic inhibitors included resistance to change and intimidation of technology (Berge, 1998; Parisot, 1997, in Maguire, 2005). Institutional inhibitors were subdivided into factors concerning administrative and technical support, and factors addressing technology and teaching concerns. It is important to understand these differentiations because eXtension’s diffusion rate may also be impeded by intrinsic, extrinsic, and institutional barriers and the appropriate methods to overcome the barriers may differ by category.

Time has been one of the most significant concerns for faculty since technology-driven distance education began to gain momentum in the nineties. Murphy and Terry’s (1998) study was one of the first to report time was perceived by faculty to be a barrier to the diffusion of distance education in agricultural education. Similar research in the following years yielded more evidence of time as a barrier, both in agricultural education and other higher education fields (Berg, Muilenburg, & Van Haneghan, 2002; Haber, 2006; Roberts & Dyer, 2005). The amount of time necessary to learn how to use the technology was also perceived to be a problem (Curbelo-Ruiz, 2002), as was the amount of time necessary to develop distance education materials (Daugherty & Funke, 1998; Nelson & Thompson, 2005). Spector (2005) found experienced online teachers spent substantially more time on their courses than colleagues teaching face to face classes; nearly twice as much time may be needed for distance versus face-to-face students (Bender, Wood, & Vredevoogd, 2004; Cavenaugh, 2005). These results raise serious questions regarding the potential for eXtension to retain the quality associated with traditional extension programs without overloading extension agents with additional time demands. Many extension agents already struggle to manage the stress caused by demands on their time (Ensle, 2005; Harder & Wingenbach, 2007; Place, Jacob, Summerhill, & Arrington, 2000).

Li and Lindner (2007) identified barriers to the diffusion of Web-based distance education for faculty at China Agricultural University. A fear of technology and lack of technical expertise contributed to faculty concerns about Web-based distance education, as did concerns about the new technology conflicting with traditional education. The increasing role of technology in extension (Gregg & Irani, 2004) may prevent extension agents from possessing similar concerns about technology. However, recent county, state, and Federal cuts in funding may cause extension agents to fear eXtension will be used to replace the traditional extension service, rather than supplement it.

Murphrey and Dooley’s (2000) study of the diffusion of distance education technologies in a college of agriculture and life sciences identified weaknesses and threats instead of barriers. Weaknesses included slow action on critical issues and loss of interaction, while career and job security, competition from public and private institutions, and misinformation on the Internet were all perceived threats (Murphrey & Dooley). All of these are serious concerns to consider with eXtension. If distance education technologies are too slow to respond to critical issues, this does not bode well for eXtension, which is designed to correct the same criticism of the traditional extension system. The threat of misinformation on the Internet represents a risk to Cooperative Extension’s reputation as a trustworthy purveyor of non-biased, research-based information and may damage both eXtension and the traditional extension service.

Purpose and Objectives
Agents must accept eXtension in order for it to be successful (Accenture,
The findings presented in this article are part of a larger study undertaken to understand the influence of selected factors on the adoption of eXtension by extension agents (Harder, 2008). The objective was to determine agents’ perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension.

Methods

The section of the study presented here was descriptive in nature. The target population was Texas Cooperative Extension county extension agents employed in 2007. At that time, very few states had actively promoted eXtension (although this has since changed). Texas was selected as the target population due to its role as an early leader in the eXtension implementation process. There were 533 extension agents in the target population (K. A. Bryan, personal communication, February 12, 2007). Cochran’s (1977) formula was used to determine the sample size \( N = 237 \) for the study. Extension agents were randomly selected to participate (Gall, Gall, & Borg, 2007).

An online questionnaire was used to collect data. The original instrument was developed by Li (2004) to examine the diffusion of Web-based distance education at China Agricultural University. Li’s original instrument was modified by the researchers to fit the context of eXtension, based upon selected studies from the review of literature (Li, 2004; Maguire, 2005). It was then converted to an online format.

The instrument was reviewed for content validity by a panel of experts composed of faculty members from Texas A&M University and the national marketing director of eXtension. A pilot study was conducted to test face validity and establish reliability.

Participants were asked to rate 31 statements based upon a six-point Likert-type scale \( 1 = \text{Strongly Disagree}, 2 = \text{Disagree}, 3 = \text{Somewhat Disagree}, 4 = \text{Somewhat Agree}, 5 = \text{Agree}, 6 = \text{Strongly Agree} \). The scale was interpreted as follows: \text{Strongly Disagree} = 1.00 – 1.50, \text{Disagree} = 1.51 – 2.50, \text{Somewhat Disagree} = 2.51 – 3.50, \text{Somewhat Agree} = 3.51 – 4.50, \text{Agree} = 4.51 – 5.50, \text{Strongly Agree} = 5.51 – 6.00. Categories suggested by Li (2004) and Maguire (2005) were used to cluster the statements into constructs. The constructs were (a) concerns about time, (b) concerns about incentives, (c) financial concerns, (d) planning issues, and (e) technology concerns. A sample of statements from the instrument is presented in Table 1.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of time available to access eXtension materials.</td>
<td>Concerns about time</td>
</tr>
<tr>
<td>Lack of monetary compensation for developing eXtension resources.</td>
<td>Concerns about incentives</td>
</tr>
<tr>
<td>My state Extension program does not have enough money to support eXtension.</td>
<td>Financial concerns</td>
</tr>
<tr>
<td>Lack of identified need (perceived or real) for eXtension.</td>
<td>Planning issues</td>
</tr>
<tr>
<td>Lack of agent access to computers.</td>
<td>Technology concerns</td>
</tr>
</tbody>
</table>
The reliability of the instrument was tested by calculating Cronbach’s alpha coefficient for each internal scale (Cronbach, 1951). A reliability level of .80 or higher was considered acceptable (Gall, Gall, & Borg, 2007). Reliability levels for the internal scales are presented in Table 2.

Table 2
Reliability Levels of Internal Scales

<table>
<thead>
<tr>
<th>Internal Scale</th>
<th>α Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerns about time</td>
<td>.890</td>
</tr>
<tr>
<td>Concerns about incentives</td>
<td>.924</td>
</tr>
<tr>
<td>Financial concerns</td>
<td>.909</td>
</tr>
<tr>
<td>Planning issues</td>
<td>.921</td>
</tr>
<tr>
<td>Technology concerns</td>
<td>.883</td>
</tr>
</tbody>
</table>

Note: Reliability levels ≥ .80 were considered acceptable.

Participants were contacted via E-mail using Dillman’s (2000) Tailored Design Method. Of the original 237 addresses, 236 were valid. A final response rate of 66.90% (N = 158) was obtained. Eight participants opted out. There were 25 responses removed due to missing or incomplete data, reducing the number of usable responses to 125. It was concluded the results could be generalized to the target population, based upon the lack of significant differences between early and late respondents for the primary variables of interest (Lindner, Murphy, & Briers, 2001). The majority of respondents had primary responsibilities in the areas of agriculture (n = 45), family and consumer sciences (n = 39), and 4-H/youth development (n = 26). Fewer agents were employed in the areas of horticulture (n = 8) and natural resources (n = 3). No respondents reported community development as a primary agent role. The minimum educational level for all respondents was a bachelor’s degree. Most (84.8%) of the agents were at least thirty years of age. Of the respondents who reported gender, 46% were female and 51% were male.

Findings/Results
The objective was to describe agents’ perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension. On a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree), agents tended to somewhat agree that concerns about time (M = 4.12, SD = .87), concerns about incentives (M = 3.90, SD = 1.00), planning issues (M = 3.84, SD = .93), financial concerns (M = 3.77, SD = 1.01), and technology concerns (M = 3.66, SD = .97) were potential barriers to adoption of eXtension. The means and standard deviations for each construct are presented in Table 3.

Table 3
Respondents’ Perceptions of Potential Barriers to eXtension by Construct

<table>
<thead>
<tr>
<th>Construct</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concerns about time</td>
<td>125</td>
<td>4.12</td>
<td>.87</td>
</tr>
<tr>
<td>Concerns about incentives</td>
<td>125</td>
<td>3.90</td>
<td>1.00</td>
</tr>
<tr>
<td>Planning issues</td>
<td>125</td>
<td>3.84</td>
<td>.93</td>
</tr>
<tr>
<td>Financial concerns</td>
<td>125</td>
<td>3.77</td>
<td>1.01</td>
</tr>
<tr>
<td>Technology concerns</td>
<td>125</td>
<td>3.66</td>
<td>.97</td>
</tr>
</tbody>
</table>

Note: Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.

Concerns about Time
Responses for the five items addressing potential concerns about time ranged from “strongly disagree” to “strongly agree” on a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree). Table 4 displays the means and standard deviations for each item. Respondents tended to somewhat agree with all five statements for this construct. The statement “Lack of time to learn how to incorporate eXtension into typical job responsibilities” (M = 4.25, SD = 1.00) had the highest mean. The statement “Lack of time available to access eXtension materials” (M = 4.05, SD = 1.05) had the lowest mean.
Table 4

Respondents’ Perceptions of Concerns about Time as a Potential Barrier to eXtension by Individual Response Item

<table>
<thead>
<tr>
<th>Concerns about Time Items</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of time to learn how to incorporate eXtension into typical job responsibilities.</td>
<td>125</td>
<td>4.25</td>
<td>1.00</td>
</tr>
<tr>
<td>Lack of time to meet the needs of traditional Extension clientele.</td>
<td>125</td>
<td>4.14</td>
<td>1.04</td>
</tr>
<tr>
<td>Lack of time available to respond to online requests for information.</td>
<td>125</td>
<td>4.10</td>
<td>1.05</td>
</tr>
<tr>
<td>Lack of time available to search for information on eXtension.</td>
<td>124</td>
<td>4.05</td>
<td>1.09</td>
</tr>
<tr>
<td>Lack of time available to access eXtension materials.</td>
<td>125</td>
<td>4.05</td>
<td>1.05</td>
</tr>
</tbody>
</table>

*Note. Overall M = 4.12, SD = .87. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.*

Concerns about Incentives

Responses for the seven items addressing potential concerns about incentives ranged from “strongly disagree” to “strongly agree” on a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree).

Table 5 displays the means and standard deviations for each item. Respondents tended to somewhat agree with all seven statements. The statement “Lack of correlation between agent use of eXtension and performance evaluation” (M = 4.07, SD = 1.11) had the highest mean. The statement “Lack of support from state administrators” (M = 3.74, SD = 1.21) had the lowest mean.

Table 5

Respondents’ Perceptions of Concerns about Incentives as a Potential Barrier to eXtension by Individual Response Item

<table>
<thead>
<tr>
<th>Concerns about Incentives Items</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of correlation between agent use of eXtension and performance evaluation.</td>
<td>124</td>
<td>4.07</td>
<td>1.11</td>
</tr>
<tr>
<td>Lack of county/parish recognition for using eXtension.</td>
<td>124</td>
<td>4.04</td>
<td>1.20</td>
</tr>
<tr>
<td>Lack of salary increase for using eXtension.</td>
<td>125</td>
<td>4.00</td>
<td>1.25</td>
</tr>
<tr>
<td>Lack of monetary compensation for developing eXtension resources.</td>
<td>125</td>
<td>3.92</td>
<td>1.15</td>
</tr>
<tr>
<td>Lack of awards for involvement with eXtension.</td>
<td>124</td>
<td>3.75</td>
<td>1.21</td>
</tr>
<tr>
<td>Lack of support from local administrators.</td>
<td>125</td>
<td>3.75</td>
<td>1.28</td>
</tr>
<tr>
<td>Lack of support from state administrators.</td>
<td>125</td>
<td>3.74</td>
<td>1.21</td>
</tr>
</tbody>
</table>

*Note. Overall M = 3.90, SD = 1.00. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.*

Planning Issues

Responses for the five items addressing potential planning issues ranged from “strongly disagree” to “strongly agree” on a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree). Table 6 displays the means and standard deviations for each item. Respondents tended to somewhat agree with all five statements. The statement “Lack of planned opportunities for agents to learn about eXtension” (M = 4.10, SD = 1.08) had the highest mean. The statement “Lack of strategic planning for eXtension” (M = 3.70, SD = 1.05) had the lowest mean.
Table 6
Respondents’ Perceptions of Planning Issues as a Potential Barrier to eXtension by Individual Response Item

<table>
<thead>
<tr>
<th>Planning Issues Items</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of planned</td>
<td>124</td>
<td>4.10</td>
<td>1.08</td>
</tr>
<tr>
<td>opportunities for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agents to learn about</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eXtension.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of shared vision</td>
<td>125</td>
<td>3.88</td>
<td>1.09</td>
</tr>
<tr>
<td>for the role of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eXtension with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>traditional Extension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>structure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of identified need</td>
<td>125</td>
<td>3.76</td>
<td>1.03</td>
</tr>
<tr>
<td>(perceived or real)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for eXtension.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of coordination</td>
<td>125</td>
<td>3.73</td>
<td>1.07</td>
</tr>
<tr>
<td>between participating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eXtension partners.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of strategic planning</td>
<td>125</td>
<td>3.70</td>
<td>1.05</td>
</tr>
<tr>
<td>for eXtension.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Overall M = 3.84, SD = .93. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.

Financial Concerns
Responses for the five items addressing potential financial concerns ranged from “strongly disagree” to “strongly agree” on a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree). Table 7 displays the means and standard deviations for each item. Respondents tended to somewhat agree with the statement “Cost of purchasing the necessary computer technologies” (M = 4.09, SD = 1.24). They tended to somewhat disagree with the statement “My state Extension program does not have enough money to support eXtension” (M = 3.46, SD = 1.07).

Table 7
Respondents’ Perceptions of Financial Concerns as a Potential Barrier to eXtension by Individual Response Item

<table>
<thead>
<tr>
<th>Financial Concerns Items</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchasing the</td>
<td>125</td>
<td>4.09</td>
<td>1.24</td>
</tr>
<tr>
<td>necessary computer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>technologies.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of financial</td>
<td>125</td>
<td>3.96</td>
<td>1.20</td>
</tr>
<tr>
<td>resources to promote</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eXtension locally.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concerns about sharing</td>
<td>125</td>
<td>3.69</td>
<td>1.16</td>
</tr>
<tr>
<td>revenue from eXtension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with multiple partnering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>institutions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of financial</td>
<td>125</td>
<td>3.66</td>
<td>1.24</td>
</tr>
<tr>
<td>resources to support the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>necessary computer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>technologies.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My state Extension</td>
<td>123</td>
<td>3.46</td>
<td>1.07</td>
</tr>
<tr>
<td>program does not have</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enough money to support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eXtension.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Overall M = 3.77, SD = 1.01. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.

Technology Concerns
Responses for the nine items addressing potential technology concerns ranged from “strongly disagree” to “strongly agree” on a six-point scale (1 = Strongly Disagree, 6 = Strongly Agree). Table 8 displays the means and standard deviations for each item. Respondents tended to somewhat agree that “Concern about loss of face-to-face contact with clientele” (M = 4.31, SD = 1.41) was a potential barrier to the diffusion of eXtension. They tended to somewhat disagree that “Lack of agent access to computers” (M = 3.07, SD = 1.36) was a potential barrier.
Table 8

Respondents’ Perceptions of Technology Concerns as a Potential Barrier to eXtension by Individual Response Item

<table>
<thead>
<tr>
<th>Technology Concerns</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concern about loss of face-to-face contact with clientele.</td>
<td>124</td>
<td>4.31</td>
<td>1.41</td>
</tr>
<tr>
<td>Lack of technical support.</td>
<td>125</td>
<td>4.06</td>
<td>1.38</td>
</tr>
<tr>
<td>Lack of training programs to learn how to use eXtension.</td>
<td>124</td>
<td>4.06</td>
<td>1.25</td>
</tr>
<tr>
<td>Concern about loss of control of Extension information at the local level.</td>
<td>125</td>
<td>3.57</td>
<td>1.38</td>
</tr>
<tr>
<td>Concern for legal issues (e.g., computer crime, hackers, software piracy, copyright).</td>
<td>125</td>
<td>3.53</td>
<td>1.30</td>
</tr>
<tr>
<td>Lack of agent access to adequate Internet connection speeds.</td>
<td>123</td>
<td>3.46</td>
<td>1.42</td>
</tr>
<tr>
<td>Concern about intellectual property rights.</td>
<td>125</td>
<td>3.44</td>
<td>1.10</td>
</tr>
<tr>
<td>Concern that eXtension will be used to replace local agent positions.</td>
<td>125</td>
<td>3.40</td>
<td>1.48</td>
</tr>
<tr>
<td>Lack of agent access to computers.</td>
<td>125</td>
<td>3.07</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Note. Overall M = 3.66, SD = .97. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Somewhat Agree, 5 = Agree, 6 = Strongly Agree.

Conclusion, Recommendations, and Implications

Web-based resources such as eXtension offer extension workers around the globe the opportunity to instantly access research-based information. In countries with the appropriate infrastructure, the spread of such technologies has the potential to improve the dissemination of information for international extension clientele with a speed unmatched by earlier delivery strategies. The lessons learned from the launch of eXtension may be used internationally to pro-actively address potential barriers in the development of similar innovations.

The global nature of the Internet offers the possibility for expanding eXtension to include the international extension community through the development of multi-national partnerships. As Phelan and Mulhall (2007, p. 40) noted, “High quality e-learning systems are expensive to develop and top quality systems can best be developed through institutional collaboration rather than each institution repeating the process.” Such international institutional collaborations, made possible through the Internet, may be critical for the growth of extension in countries with limited domestic resources.

This study provided information which may be used to address concerns which inhibit the rate of adoption for eXtension and similar Web-based resources. Extension agents somewhat agreed that each potential barrier was, in fact, a barrier. Extension agents had the most concerns about time. Technology concerns were least perceived as a barrier. Eliminating or decreasing the perceived barriers should increase extension agents’ adoption of eXtension (Schifter, 2000).

Perhaps the most critical of the identified barriers was the concern about time. The extension agents’ concerns about the time necessary to use eXtension were consistent with the previous research which identified time as a barrier to the diffusion of distance education in higher education (Berg, Muilenberg, Van Haneghan, 2002; Curbelo-Ruiz, 2002; Haber, 2006; Murphy & Terry, 1998; Nelson & Thompson, 2005; Roberts & Dyer, 2005). Extension agents indicated they neither had the time to learn how to incorporate eXtension into their daily activities, nor the opportunity to do so. Also, extension agents reported having a lack of time to meet the needs of traditional extension clientele. Working with eXtension clientele may be perceived as an impairment to their ability to work with traditional clientele. The extension agents’ concerns...
about time are not easily resolved and present a considerable challenge for developing strategies to overcome this barrier.

Concerns about incentives were identified as a recurring barrier in Maguire’s (2005) synthesis of distance education literature. Extension agents somewhat agreed there were a lack of eXtension incentives related to (a) their performance evaluation, (b) their salary, and (c) county recognition. The development of a reward strategy to motivate extension agents to use eXtension may be appropriate to address concerns about incentives. Thinking towards the future, incentives would likely be needed to facilitate the development of a global eXtension system. That would provide extension agents with additional motivation to help their international colleagues. Those incentives may be critical given the reported concerns about having enough time to serve local clientele; this problem would only be compounded with the addition of international clientele.

The results of this study imply educating adopters about the innovation is a critical component of the diffusion process. Extension agents felt there were not enough opportunities to learn about eXtension. They had concerns regarding a lack of time to learn how to incorporate eXtension into their jobs. In addition, the lack of training programs available for learning how to use eXtension was a technology concern. An appropriately designed training program for agents could be effectively utilized to (a) alleviate concerns about time, (b) provide important “how to” information related to the use of eXtension, and (c) offer access to technical support. Ideally, a training curriculum could be designed and distributed internationally to encourage multiple extension systems to take advantage of eXtension.

Respondents somewhat agreed the cost of purchasing the computer technologies necessary to use eXtension was a concern. It is worth noting that even the best training programs and communication strategies are likely to be ineffective without the appropriate infrastructure available to support the innovation. Infrastructure continues to be a significant challenge for developing countries, especially those in Africa (Leigland & Butterfield, 2006). A lack of infrastructure would be expected to impede the diffusion of Web-based resources in such countries. Non-governmental organizations (NGOs), the U.S. Agency for International Development (USAID), and similar agencies are potential sources of financial support for strengthening infrastructure.

The loss of face-to-face contact with clientele was the most agreed upon technology concern. Previous research found agricultural education faculty had a similar concern about the loss of interaction with students in distance education courses (Murphrey & Dooley, 2002; Nelson & Thompson, 2005). Dromgoole and Boleman (2006) found extension agents believed the lack of direct interaction between extension agents and clientele was an obstacle to using distance education. International extension workers might share the same concern given the popularity of such face-to-face activities as farmer field schools. A lack of widespread Internet access in developing countries (The World Bank, 2007) may increase the likelihood of eXtension being used predominantly by the extension workers themselves, rather than their clientele. Ironically, the digital divide may effectively prevent concerns about the loss of face-to-face contact with clientele in some countries.

The possibilities for future eXtension research are broad due to the “newness” of the innovation. eXtension has the potential to bridge extension systems worldwide by creating one global extension network which offers the power of knowledge from many different sources. The possibilities for using eXtension to share critical information in times of international crisis, such as during agricultural epidemics like foot and mouth
disease and bird flu, have yet to be explored. Future research should focus on the feasibility of creating a Web-based global extension network. The results of this study and future studies will aid in understanding the adoption and diffusion of information technologies as delivery strategies for extension.

References


Participation of Zulu Farmers in a Goat Health Research and Extension Project in South Africa

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Abstract

This study took place in a small-scale goat farming community, where farmers considered that the major problems affecting goat health and productivity (diarrhea, gastrointestinal helminth infection, and poor reproductive performance) were exacerbated by a lack of information on goat health and management. The objective was to collaborate with the farmers and develop a flexible framework for the acquisition of skills and knowledge which could ameliorate these problems. Promulgation of such knowledge and skills, if successfully accomplished, would nurture “champions” in the local farming community. These farmer champions would then constitute important role models and a local source of advice and encouragement for other farmers. This paper describes the resultant on-farm goat health research and the development of a “Goatkeepers’ Animal Health Care Manual”. The approach taken exemplifies how the engagement and participation of farmers in such a process may be enhanced, a departure from that of traditional transfer of technology. The methodology involved a “hands-on” approach and encompassed a thorough preparatory phase, on-farm experimentation, and regular meetings with farmers geared to their current levels of expertise, a process which is equally applicable to other similar agro-ecological zones. There is also scope for universities, researchers, and extensionists to assist with the development of farmers’ analytical and record-keeping skills, with the strengthening of farmer associations, and with the training of community animal health workers. A case is made for the organizations involved to continue to cross the institutional divides so that the long-term sustainability and development of small-scale farming communities is ensured.

Keywords: Farmer Participation, Goat Research, South Africa
Introduction

The small-scale farming sector in South Africa is characterized by poverty, dependency on the state, a lack of entrepreneurship (Ngomane, Thomson, & Radhakrishna, 2002), and poor access to basic information on animal diseases and their management (Getchell et al., 2002; Letsoalo, Krecek, Botha, & Ngetu, 2000; Masika, Sonandi, & Van Averbeke, 1997a; Masika, Sonandi, & Van Averbeke, 1997b). KwaZulu-Natal (KZN) Province, characterized by a predominantly rural population (Ntsime, Jennings, & Dube, 2003), has a high density of small-scale livestock keepers (Thornton et al., 2002).

The farming communities of Nkwezela, Hlafuna, and Njobokazi, near Bulwer, southwestern KZN Province, are typical examples of this small-scale farming sector (De Villiers & Letty, 2001). Essentially all of Zulu origin, the population grew substantially between 1996 and 2001, and unemployment rose from 26% to 39% (Jennings, 2004; Ntsime et al., 2003). Most individuals (>90%) had at least very basic primary education. Earlier studies in the area indicated that chickens, goats, and cattle are the most prevalent livestock and that cattle, goats, sheep, and horses are all communally grazed (De Villiers & Letty, 2001). The farmers expressed a need for information on livestock diseases, the potential causes of livestock mortality, and the use of medication. Goat health problems included diarrhea, gastro-intestinal helminths, poor reproduction, deaths due to unknown causes, and coughing. Other problems encountered were theft, poor livestock productivity, and a shortage of grazing (De Villiers & Letty, 2001; Mapeyi, Gumede, & Letty, 2006).

In February 2003, two focus group meetings centered on goat farming were conducted in the target area (see Ntsime et al., 2003). The meetings confirmed the important cultural role that goats play in the communities, for example, for the payment of the bride price, or lobola, and during traditional ancestral rituals. Goats were also kept for sale and for food, which indicated their importance to the livelihoods of the farmers. The attendees at the focus groups were, however, reluctant to organize into a structure to assist them in selling or buying goats.

In the present study, the aims were to develop cost-effective and sustainable strategies to control gastro-intestinal nematode infections in goats and to improve feed utilization, using a participatory methodology. Conventional station-based approaches to agricultural research, technology development, and extension have failed to achieve the expected results in the small-scale farming sector of the developing world (Stroud & Kirkby, 2000). The technologies developed were often inappropriate for small-scale farmers, as the conditions on-farm, including the farmers’ own management type and priorities, were not adequately considered. Participatory processes were then developed whereby the farmers’ contribution received greater recognition and researchers assumed a more supportive role (Conroy, 2005). Research on-farm, where the involvement of the farmer is much stronger, received greater preference to on-station experimentation. Extension increasingly came to be seen as an integral part of a human development program (Worth, 2006).

One participatory methodology is the farming systems research (FSR) approach and this approach was applied in the present work (Collinson, 1987). It consisted of a diagnostic phase, which has essentially been described in the introductory paragraphs to this article. Following on this phase, an on-station experiment was carried out at Onderstepoort (see Vatta et al., in press). To validate and assess the potential applicability of the results of this experiment under small-scale management conditions, an on-farm experiment was then conducted.
in Bulwer. Recommendations were developed and extended to farmers. Supporting the farmers’ need for information on goat health and management, such information was also packaged, tested, and revised for relevance, clarity and usefulness.

Purpose and Objectives
This article describes how small-scale farmers were engaged in an on-farm goat health research project, how appropriate extension materials were developed, and how an awareness of the potential to improve goat production was created in the study area and the wider goat farming community. A further objective is to describe how, during the course of the study, the effectiveness and relevance of the approach was continually assessed and appropriately modified by monitoring the uptake of the goat health and management information within the study community.

Methodology
The communities of Nkwezela, Hlafuna, and Njobokazi were engaged through a number of participatory activities. A goatkeepers’ interest group had been formed from farmers from Nkwezela, Hlafuna, and Njobokazi who had agreed at a meeting in August 2002 (recorded in Mapeyi et al., 2006) to be interviewed by the FSR Section of the KZN Department of Agriculture and Environmental Affairs about their goat farming practices. Towards the end of 2003, 10 farmers of the goatkeepers’ interest group that had at least 7 weaned does were invited to make their goats available for an on-farm experiment. One of these decided not to participate. The experiment examined the effects of nutritional supplementation by means of urea-molasses blocks (Voermol Protein Blocks, Voermol, South Africa) and of anthelmintic (deworming) treatments with ivermectin (Ivomec Liquid, Merial South Africa) on goat health and productivity (see Vatta et al., 2007). The farmers’ role in the work was to assume the risk of undertaking the experiments and to provide time and labor to assist with the handling of the goats.

The homesteads of the 9 participating farmers were visited every 4 weeks from January 2004 to December 2005. The visits provided the opportunity to train the farmers in the correct recognition of sick animals, the correct administration of drenches and injections for the treatment of disease, and the correct feeding of urea-molasses blocks. The blocks and health-care treatments were provided free of charge. The farmers were also trained in the FAMACHA® system, in which the color of the conjunctival (eye) mucous membranes of individual sheep and goats are examined (see Malan, Van Wyk, & Wessels, 2001). Those animals that are scored as being anemic, as evidenced by a pale mucous membrane color, are treated with an effective anthelmintic. In the present study, ivermectin was used. The system may only be used where the predominant cause of anemia is wireworm (Haemonchus contortus) infection. In the study area, wireworm is the predominant helminth in the goats during the warm, wet summer months. The farmers examined the goats for anemia at the 4-weekly visits and drenched the anemic individuals. The goats had been ear-tagged to identify them individually. Written records of individual goats treated were kept by the researchers.

A “Goatkeepers’ Animal Health Care Manual” (Vatta et al., 2006) was compiled to include information on disease and management problems of goats. The aim was to achieve a format and level of language that farmers could easily understand and use so that they could learn about, recognize, and manage diseases in their goats. The manual was produced in English and then translated into the local language of IsiZulu, printed as spiral-wire-bound copies with weather-proof laminated pages in A3 and A4 format, and printed as laminated A0 posters. Using the posters in IsiZulu, the information they contained was
presented to the goatkeepers’ interest group at 10 information sessions held at a local community hall during the period December 2002 to May 2004. The farmers of this interest group (including the farmers involved in the on-farm experiments) were personally invited to attend these sessions; however, the meetings were open to all livestock owners who wished to attend. The meetings, limited to discussion around one or two topics, were conducted in IsiZulu with translation into English where necessary. The attendees were encouraged to ask questions on each topic and to give comments on, for example, the prevalence of these diseases and problems in their area, but the farmers were also encouraged to ask questions about any other problems in their animals (not only goats).

After each session, the researchers completed a self-assessment questionnaire to evaluate the relevance, usefulness, and clarity of the topics discussed by the farmer group. Comments and questions of the farmers were recorded by the researchers. In addition, inputs from various experts in the field of goat health and production and in agricultural extension were sought. These comments were all addressed during the revision of the manual.

Workshops and meetings were held with the farmers to report back on the results of the research. At a workshop in June 2004, participants were divided into a number of groups at the beginning of the meeting. An extension officer, acting as a facilitator, asked the farmers: (a) whether they were aware of the goat research which was being conducted in the area, and if they were, what their perceptions of it were; (b) whether they normally kept medicine to treat goats when they were ill; and (c) whether the work that was being done would stimulate them to start keeping medicines or nutrient blocks for their animals. In May 2005, a meeting was held mainly with participating farmers regarding the continuation of the research study through a second year.

During November 2005, questionnaire interviews to assess the potential impact of the project were carried out with the 9 participating farmers by crop and horticulture members of the FSR Section, whose involvement with the goat project had been peripheral. In two cases, the farmer was not available on the day of the interview and the farmer’s spouse, who had been closely involved in the project, was interviewed. The interviewees were asked whether they strongly agreed with, agreed with, were neutral towards, disagreed with, or strongly disagreed with a number of statements regarding certain aspects of the project (Table 1). For comparative purposes, 7 neighbors to the participating farmers were similarly interviewed (Table 1). Each response was assigned a value from 1 to 5, with 5 indicating that the farmers strongly agreed with the statement and 1 that the farmer strongly disagreed. For example, if a farmer indicated that they would strongly recommend the FAMACHA© system, the response was assigned a value of 5, whereas if the farmer strongly disagreed, the response was assigned a score of 1. The median score and range for each question were then calculated. The results of the questionnaire were presented to the community at a meeting in December 2005 and further comments recorded. The responses of the participating farmers were discussed, but those of the neighbors had not been analyzed at that time and were not presented.

In March 2006, a workshop was held for technicians and scientists of the South Region of KZN Department of Agriculture and Environmental Affairs. Two of the participating farmers, one man and one woman, who had increased substantially in self-confidence and knowledge, were invited to this workshop. They were given an opportunity to present their experiences of the project.
Findings

The findings of the study are best considered in terms of: (a) how the participation of the farmers in the on-farm research was enhanced, and (b) how an awareness of the potential to improve goat production in the communities was created.

Enhancing the Participation of the Farmers

Participation in the on-farm experimental work was good. In 82% of cases (range for individual farmers: 44%-100%), the 9 farmers were present on the day that they were visited for the work. On all occasions it was possible to collect data at all the households during the scheduled 4-weekly visits.

When interviewed in November 2005 and at the meeting in December 2005, the participating farmers indicated a positive response to the project in general (Table 1). Based on their own observations, the farmers said that their goats had showed an improved rate of kidding, an improved survival rate of goat kids, and increases in the total number of goats.

The information, training, and advice provided during the project had been very useful (Table 1). The farmers or their assistants learnt to drench their animals and give subcutaneous or intramuscular injections where necessary. The male farmer at the workshop for agricultural scientists and technicians in March 2006 mentioned that he had learnt how to use the FAMACHA® card, how to look for worms in goats that are killed or die, how to trim the hooves of goats, how to lance abscesses, how to identify pneumonia in animals that died, and how to take samples from animals that die for submission to a laboratory for examination. At these exit interviews, most of the farmers indicated that diseases and worms were not a problem in their goats. From comments recorded by the interviewers for this question, it appears that the farmers felt that worms were under control or that one needed to examine the goats and/or take samples from them to determine whether worms were a problem.

Of the 9 participating farmers, 1-2 persons were in the researchers’ opinion satisfactorily trained in the FAMACHA® system at 4 of the households. Of the other farmers, 4 could not be trained because of age or poor eyesight and their sons or goat herds were not consistently available to learn the technique. The 9th farmer was not consistently present mainly because he carried out odd jobs in town. The response of the participating farmers to the FAMACHA® system was very positive (Table 1).
Table 1

Responses of Participating Farmers and Their Neighbors to Exit Interview Questions

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Neighbors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$Mdn^a$ (R) $n$</td>
<td>$Mdn$ (R) $n$</td>
</tr>
<tr>
<td><strong>Productivity of goats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats have improved</td>
<td>5 (4-5) 8</td>
<td>4 (3-5) 7</td>
</tr>
<tr>
<td>Goats producing more kids</td>
<td>5 (4-5) 9</td>
<td>3 (2-5) 7</td>
</tr>
<tr>
<td>Goats better condition</td>
<td>5 (4-5) 9</td>
<td>3 (2-4) 7</td>
</tr>
<tr>
<td>Goats healthier</td>
<td>5 (4-5) 9</td>
<td>4 (3-5) 7</td>
</tr>
<tr>
<td><strong>Livelihoods/income from goats</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats more valuable</td>
<td>5 (4-5) 9</td>
<td>3 (3-5) 7</td>
</tr>
<tr>
<td>Selling/bartering more goats</td>
<td>4 (1-5) 9</td>
<td>2 (1-4) 7</td>
</tr>
<tr>
<td>Wealthier now</td>
<td>4 (1-5) 9</td>
<td>3 (1-4) 6</td>
</tr>
<tr>
<td>More status now</td>
<td>4 (3-5) 9</td>
<td>3 (1-5) 7</td>
</tr>
<tr>
<td>Goat farming more important</td>
<td>4 (3-5) 9</td>
<td>4 (3-5) 7</td>
</tr>
<tr>
<td><strong>Information provided</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Researchers gave useful advice</td>
<td>5 (4-5) 9</td>
<td>4 (3-5) 7</td>
</tr>
<tr>
<td>Have learnt from training</td>
<td>5 (4-5) 9</td>
<td>4 (3-5) 7</td>
</tr>
<tr>
<td>Have learnt from my neighbor</td>
<td>4 (3-5) 7</td>
<td></td>
</tr>
<tr>
<td>Have heard about FAMACHA©</td>
<td>4 (1-5) 7</td>
<td></td>
</tr>
<tr>
<td>Have been made aware of diseases</td>
<td>5 (4-5) 9</td>
<td>4 (2-5) 7</td>
</tr>
<tr>
<td>Have been made aware of worms</td>
<td>4 (4-5) 9</td>
<td>4 (2-5) 7</td>
</tr>
<tr>
<td>Have applied technologies</td>
<td>4 (3-5) 7</td>
<td></td>
</tr>
<tr>
<td>Would like to learn more</td>
<td>4 (4-5) 7</td>
<td></td>
</tr>
<tr>
<td>Disease/worms not a problem</td>
<td>4 (2-5) 8</td>
<td>4 (2-5) 7</td>
</tr>
<tr>
<td>Did not need training</td>
<td>2 (1-5) 9</td>
<td></td>
</tr>
<tr>
<td>Researchers did not explain info</td>
<td>1 (1-4) 9</td>
<td></td>
</tr>
<tr>
<td>Technologies not applicable</td>
<td>4 (1-4) 7</td>
<td></td>
</tr>
<tr>
<td>Neighbor did not teach me</td>
<td>3 (1-4) 7</td>
<td></td>
</tr>
<tr>
<td><strong>FAMACHA©</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMACHA© is useful</td>
<td>5 (4-5) 9</td>
<td></td>
</tr>
<tr>
<td>FAMACHA© improved goat health</td>
<td>5 (4-5) 9</td>
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<td>I will continue to use FAMACHA©</td>
<td>5 (4-5) 9</td>
<td></td>
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<tr>
<td>I will recommend FAMACHA©</td>
<td>5 (4-5) 8</td>
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</tr>
<tr>
<td>FAMACHA© upset my farming</td>
<td>2 (1-5) 9</td>
<td></td>
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<tr>
<td>Too many problems with FAMACHA©</td>
<td>2 (1-3) 9</td>
<td></td>
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<td>FAMACHA© did not work</td>
<td>1 (1-1) 9</td>
<td></td>
</tr>
<tr>
<td>FAMACHA© difficult to use</td>
<td>2 (1-4) 9</td>
<td></td>
</tr>
<tr>
<td>I will buy worm remedies</td>
<td>4.5 (4-5) 8</td>
<td>4 (3-4) 7</td>
</tr>
<tr>
<td>Easy to buy worm remedies</td>
<td>4 (3-4) 9</td>
<td>4 (2-5) 7</td>
</tr>
</tbody>
</table>

Note. *Interviewees responded to each statement in the table according to the following scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree. $Mdn = median; R = range; n = number of respondents.*
Based on comments from farmers at the meeting in December 2005 and at the workshop in March 2006, the training in the FAMACHA© system had encouraged the farmers to examine their animals to see what was wrong with them. This allowed animals that were sick as a result of worm infections to be treated early or for other causes of illness to be identified. Both these leading farmers were continuing to examine their goats for anemia after the end of the project. While the male farmer had kept remedies before the start of the project, the female farmer was now buying anthelmintic to replenish her stock. Both farmers were apparently supplying medication to their neighbors for a fee. Community members now apparently consult them on how to treat their animals.

Creating an Awareness in the Community of the Potential to Improve Goat Production

Excluding the meeting in May 2004, on average 14 farmers attended the information days for the testing of the “Goatkeepers’ Animal Health Care Manual”. Twenty-seven farmers had been identified by the FSR Section for interviews on goat production in the area and these interviewees were invited to attend the information days. As such, there was attendance of about 50% at the information days. Attendance did wane in March 2004 and extra effort was put in to encourage farmers to attend the next meeting which took place in May 2004. Forty-seven goat farmers and non-goat farmers then attended this meeting. The workshop for the greater farming community in June 2004 was attended by 57 members of the community, a record number and an indication of the positive awareness that had been created of the project. The meeting in December 2005 for reporting back on the results of the research was attended by 27 farmers.

Fifty-three of 57 participants from the community at the workshop in June 2004 were goat keepers. Forty out of the 57 participants from the community were aware of the goat research being conducted in the area and they saw it as an important initiative because problems were diagnosed and advice given to improve the livestock. Seventy percent of the respondents normally kept medicine to treat goats when they were ill. All of the participants indicated that the research project would stimulate them to start keeping medicines or nutrient blocks for their animals, but they required financial support.

When interviewed in November 2005, the neighbors of the participating farmers felt that the goats of the participating farmers were producing more kids and were in better condition (median score = 4), while their scores regarding these productivity measures of their own goats were slightly less favorable (median score = 3) (Table 1). While the farmers who had participated in the on-farm work indicated that their livelihoods had improved since the project started (median score = 4 or 5), their neighbors’ corresponding scores were generally neutral (score = 3). The response to questions regarding the uptake of information by the neighbors gave somewhat conflicting responses. For example, the neighbors said that they had learnt from the participating farmers but also that they did not teach them anything new. The neighbors had been made aware of diseases and worms, wanted to learn more, and wanted more information, but on the other hand they indicated that worms and diseases were not a problem. It seemed that while the neighboring farmers were aware that potential improvements in goat health and management were possible, these farmers did not yet have the detailed knowledge of how to go about doing this. For example, the neighbors may have tried out the FAMACHA© system but not followed the examinations through on a regular basis, leading them to believe that the technology was not applicable to their situation.
At the meeting in December 2005, the attendees were specifically asked what they saw as the way forward. The formation of a farmers’ organization received some support as the suggestion was made that such an organization would be able to buy in bulk and thus save. Appreciation was shown for the training of farmers in the FAMACHA© system which was being extended to other farmers in the area by the FSR Section. Farmers who had not taken part in the on-farm research expressed a desire to learn from those who had participated in the work and these, in turn, indicated their willingness to assist others. Theft was mentioned as a continuing problem in the area.

Based on inputs from the FSR Section who had interacted with the target farmers as well as veterinary personnel working in the area, the first draft of the “Goatkeepers’ Animal Health Care Manual” contained information on abortions, abscesses, coccidiosis, footrot, heartwater, mastitis, orf, pneumonia, pulpy kidney, rectal prolapse, roundworms, and tetanus. There was a section on the basic procedures of injecting and drenching goats. The information was well received, numerous comments were made, and all kinds of questions were asked by the farmers. This showed that there is an insufficient flow of information from and to people in these rural areas. It was apparent that the farmers were familiar with symptoms of diseases and problems, such as abortions, orf lesions, and diarrhea. However, they were generally less familiar in associating these symptoms of disease with specific causes such as bacteria, viruses, and protozoa. Based on the information from the farmers and other specialists, the information on footrot and rectal prolapse was removed, while information on bluetongue, foot abscesses, and liver fluke was added. More information was also provided on the general management of goats, on other simple procedures (such as castration), on how to identify sick animals, and on the correct use of medicines. The demand for the manual was high amongst farmers, governmental and non-governmental organizations, and other individuals. Almost 2000 copies of the final English version were distributed nationally and internationally within a year of printing and several hundred in IsiZulu.

Discussion
Cristóvão, Koehnen, and Portela (1997) describe an extension program development continuum which has at its one extreme a “centralized, top-down, and blueprint approach” (p.58) and at the opposite extreme a process that is “decentralized” (p. 58) and “bottom-up” (p.58). The approach adopted for the project described in this article was closer to the first extreme on this continuum. It had a leaning towards the transfer of technology approach as described by Lev and Acker (1994, p. 37). The researchers set the agenda and directed the process to a large extent in terms of designing the on-farm experiment and determining the frequency of visits and contact with farmers. There was dissemination of information generated on-station and from the general scientific literature to an “audience” of farmers (Lev & Acker, 1994, p. 39). However, the project moved away from a traditional transfer of technology exercise in which the farmers were simply passive recipients of technology and information. Rather, the project facilitated the “acquisition of skills by farmers to engage with scientific enquiry” (Worth, 2006, p. 12) while simultaneously allowing the researchers to share their knowledge and information.

The process followed led to adoption and ownership of what was shared, taught or demonstrated. The farmers participating in the on-farm research stated that they had learnt a number of techniques, including how to use the FAMACHA© card for identification of anemic goats; they were continuing to implement improvements in goat management beyond the duration of the project; and they were sharing information
with their neighbors and the community. This range of learning was found to extend beyond the intended degree of learning when the farmers indicated that they were themselves providing medication and advice to fellow farmers. These farmers were starting to act as important role models or “champions” (for examples of champions see the Web site of the Government of the United Kingdom, Department for Children, Schools and Families, n.d.) and as an accessible source of advice and encouragement for other farmers in the area.

The farmers’ participation was achieved and enhanced through a number of aspects of the approach. The project underwent a thorough preparatory phase (which included community meetings, interviews, and focus group meetings) during which the need for the work was identified. Carrying out the experiment on-farm meant that any improvements in the goat herd were immediately visible to the participating farmers. Regular visits to the farmers’ homesteads and a “hands-on” approach meant that important concepts could be reinforced, techniques such as drenching and injections repeatedly demonstrated, and the confidence of the farmers built up. The incorrect or partial application of extension messages was avoided. Regular meetings, including information days and workshops, with the farmers and members of the greater community played an important role. To avoid the top-down approach described by Cristóvão et al. (1997, p. 58), attention was paid to the particular socio-cultural environment and circumstances in which project implementation occurred.

Participation was enhanced by conducting the meetings in the local language, by opening up the meetings to any community member, and by taking questions on any aspect of animal health. In particular, matters of concern to those farmers of the greater community who were not direct participants in the on-farm research could be addressed. In this way, fears and misperceptions of the greater community towards the on-farm work were allayed.

The meetings allowed for an interaction and a flow of information between farmers and researchers, and opportunities for learning on both sides. Both the farmers and the researchers were able to investigate, assimilate, and share information in a manner proposed by Worth (2006). The local farmers acted as partners in the work and the research scientists and the farmers were “co-learners”, a term used by Lev and Acker (1994, p. 39). Farmers learnt from the information provided, while the researchers gained insight into the uptake of new knowledge and gaps in the knowledge of farmers. Perhaps, more importantly, the researchers gained insight into the farmers’ systems and priorities. The researchers were able to immerse themselves, albeit transiently, in the life of the community, to understand better the problems, hardships, and challenges faced by the farmers. The changes in the “Goatkeepers’ Animal Health Care Manual”, especially the need for more information on the general management of goats, illustrated a shift away from the extension approach which looks narrowly at the transfer of the technology of the researcher to an approach that incorporates the whole system. It also supports Worth’s (2006) assertion that “farmers are experimenters, innovators, and active participants in change” (p. 6) and that extension needs to engage farmers in this vein (p. 6).

This article also aimed to describe how and to what extent an awareness was created of the potential to improve goat production in the greater goat farming community. Some awareness was created through the meetings and workshops with the community, but the findings of the study suggest that the process followed was less effective in disseminating the technology and information to the farmers not directly participating in the on-farm research. This is borne out by the contradictory responses of
the participating farmers’ neighbors to the
questions in the exit interviews; their
conclusions that the technologies were not
applicable to them; and the difference in
perceived impact on livelihoods between the
participating farmers and their neighbors. If
uptake had been better than it was, the
neighbors may have been expected to have
had some improvement in livelihoods rather
than these remaining the same. These
responses, together with the mention of theft
(which has nothing do with goat illness) and
the stated need for financial support to be
able to “adopt” the concept of greater goat
care, all emphasize: (a) the need to engage
further the farmers of the greater community
in a spirit of learning; and (b) the need to
understand that no matter how focused the
researcher wants to be (on improving goat
health, in the present study), farmers will
always default to a wider system (in the
present example, to the whole farming
system, which includes the real threat of
theft of goats).

**Educational Implications and Recommendations**

Changing the perception of agriculture in the rural communities is
central to the realization of the enormous potential that agriculture holds for food
security, gainful employment, income-generation, and improved standards of living
(De Villiers, 2006). The participatory approach, described in this paper, is
suggested, as such on-farm adaptive research and extension approaches help
increase community confidence, awareness, and activity (Subair, 2002). Such was the
result of the present study and by the end of the project, indications were that farmers
were becoming more independent.

The approach described in this article, if upscaled and improved, could be
extended to include other communities in the province. Upscaling would involve such
factors as: (a) facilitation of the formation of livestock associations to promote greater
sharing of knowledge and expertise; (b) further training of farmers in “new”
communities in general goat care and management and the identification of local
farmer champions; (c) further specific training of farmer champions so that they
could provide local community animal health care and advice, and supply small
amounts of animal medication; and (d) the introduction of “Farmer Field Schools”
(Minjauw, Muriuki, & Romney, 2003) to assist farmers to learn from their own shared
experiences and to “think for themselves” (Kumba, 2003, p. 53).

In South Africa, agricultural teaching and training is mainly conducted by
institutions of higher learning, research by
the Agricultural Research Council (ARC) of
South Africa and extension by the provincial
departments of agriculture, but there is
minimal cross-linking (Ngomane et al.,
2002). The present study exemplifies how
the successful integration of teaching,
research, extension, and farming may be
formulated. The stakeholders included
university scientists that provided a teaching
and research function through the
supervision and guidance of a graduate
student, an ARC specialist discipline
researcher, on-farm adaptive researchers and
extension agents from the KZN Department
of Agriculture and Environmental Affairs,
and small-scale farmers. This integration of
teaching, research, extension, and farming
costitutes a successful and powerful tool
which, if further supported and adopted,
could be of great benefit to the small-scale
farming communities of South Africa and
beyond. Ideally, students that are being
trained as researchers and extension
practitioners should be exposed to, and
participate in, on-farm research projects as
part of the main stream teaching curricula of
institutions of higher education.

While the findings of this study
cannot be generalized, they contribute to a
growing understanding of the need for a
serious review of South Africa’s extension
programs. Few of South Africa’s extension
practitioners are adequately trained to be
able to facilitate the range of learning that the approach suggested by this study demands. Most public sector extension practitioners have little or no formal training in learning theory. They are trained primarily as technologists (Worth, 2006). What extension training they do have is largely grounded in the technology transfer mode (Worth, 2006) which has long outstripped its usefulness (Röling, 1995).

It is argued that the changes taking place in agriculture in the Republic of South Africa call on the extension practitioner to become more of a “developer and facilitator of the specific learning process, content and outcomes which will drive his [/her] engagement with farmers as ‘learners’ ” (Worth, 2007, p. 142). To make this possible will require extensive revision of agricultural extension curricula (Worth, 2007).

Acknowledgements
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Soft Systems Methodology: An Intervention Strategy

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Abstract  
Agricultural and extension educators are frequently called upon to intervene in situations where solutions to problems are complex, subjective, and often impossible to achieve. Soft Systems Methodology (SSM) is commonly considered to be an intervention methodology to use in situations where the problem is poorly-defined, controversial, or ‘messy.’ SSM is used to help ensure that the people component remains a central element of the program development and problem solving process, and is key to develop agreement on issues such as the nature of the problem, and the definition of an improved situation. The authors discuss SSM educational importance and applications for agricultural and extension educators, and present the seven stages of SSM as described by Checkland (1981): 1. Inquire into the situation (real world); 2. Describe the situation (real world); 3. Define Human Activity Systems (HAS) (systems thinking); 4. Conceptual modeling (systems thinking); 5. Compare conceptual model with real world; 6. Debate desirable and feasible change (real world); and 7. Implementation (real world).

Keywords: Soft Systems Methodology, Program Development, Problem Solving, Human Activity Systems, Complexity, Systems Thinking
Introduction

Agricultural and extension educators are frequently called upon to intervene in situations where solutions to problems are complex, subjective, and often impossible to achieve. Soft Systems Methodology (SSM) is commonly considered to be an intervention methodology, and has been employed in situations where the problem is poorly-defined, controversial, or ‘messy.’ Wilson and Morren (1990) suggest that SSM helps develop agreement on key issues such as the nature of the problem, the definition of an improved situation, and the notion that such agreement cannot be achieved without significant contribution from all parties involved in the situation. This approach may lead to the identification of specific technical problems where the basic sciences or hard systems approach may be more appropriate.

Soft Systems Methodology (SSM)

SSM is a process that includes both ‘real world’ and ‘systems thinking’ activities. The process starts with ‘real world’ activities (inquiry and description of the problem situation) and purposefully involves the people, the environment, and the problem being addressed. ‘Systems thinking’ activities follow to define human activity systems and conceptual models. Once constructed, these conceptual models are compared to the expressed ‘real world’ problem situations. Finally, the process again involves activities in the ‘real world,’ including participatory analysis, communication, evaluation, and implementation of the proposed changes (Checkland, 1981). Although apparently linear, SSM is more of a recurring process, as described by Von Bulow (as cited by Luckett & Grossenbacher, 2003):

SSM is a methodology that aims to bring about improvement in areas of social concern by activating in the people involved in the situation a learning cycle, which is ideally never-ending. The learning takes place through the iterative process of using system concepts to reflect upon and debate perceptions of the real world, taking action in the real world, and again reflecting on the happenings using system concepts. (p. 149-150)

More specifically, the seven stages of SSM were described by Checkland (1981) as follows:

Stage 1 – Inquire into the Situation (Real World). The approach most frequently used to analyze of problematic situations is to start by identifying the problem. In the Soft Systems inquiry approach, this is exactly what the researcher should not do, because the majority of situations s/he will encounter do not have only one problem, but are a complex series of situations with interconnected and multifaceted problems. Moreover, these problems may not be easily understood at the beginning of the process. The main objective of this stage, therefore, is to identify and study in-depth the perspectives of people in a particular situation and environment.

Stage 2 – Describe the Situation (Real World). Help the stakeholders rationalize their environment, realize the main topics of concern or issues to be dealt with, and identify a range of possible and relevant strategies for improvement.

Stage 3 – Define Human Activity Systems (HAS) (Systems Thinking). Define relevant systems by using Smyth and Checkland’s (1976) CATWOE (see also Checkland, 1981), a mnemonic that suggests six elements in which to concentrate when defining a system, as described in Table 1. CATWOE is particularly in helping to articulate assumptions, particularly the worldview of the stakeholders involved in the process.
Stage 4 – Conceptual Modeling (Systems Thinking). Develop a conceptual model based on CATWOE. The purpose is to have the stakeholders involved in the process thinking deeply, creatively, and with a multidisciplinary perspective, about how things might operate in the future, but without a commitment to actually implement any of the changes.

Stage 5 – Compare Conceptual Model with Real World. Test proposals for change by comparing the conceptual model(s) to the real world depiction of the situation developed in stages 1 and 2. The ultimate objective of this stage is to prepare the conceptual model(s) for presentation to all stakeholders, including preparing and developing appropriate communications and debate.

Stage 6 – Debate Desirable and Feasible Change (Real World). The comparison and debate stages have much in common in that both aim to test the conceptual models developed in stage 4 and contrast them with the situation expressed in stage 2. Also they both show full participation, learning, and communication between all stakeholders, as compared to the expert to client approach (advice-giving and recommendation-receiving) (Wilson & Morren, 1990) so often criticized in the analysis of diffusion of innovations (Rogers, 2003). This stage looks forward, discussing the recommended changes of the model and considering whether they are needed and workable.

Stage 7 – Implementation (Real World). Design a plan to carry out specific actions, communicate the specifics of the plan to all stakeholders affected (actors), monitor performance and the environment, and evaluate results. As a result, some modifications in the plan may be necessary.

Table 1. Summary of CATWOE Questions: Six Items Covered in a Well Formulated Systems Definition (Smyth & Checkland, 1976; Checkland, 1981)

<table>
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<tr>
<th>C (Customers)</th>
<th>= Who could benefit or suffer by the change put forward through the SSM process?</th>
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<tr>
<td>A (Actors)</td>
<td>= Who would manage and be responsible for the improved situation/operation?</td>
</tr>
<tr>
<td>T (Transformations)</td>
<td>= What could be a central transformation or change process that characterizes an improved situation?</td>
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<tr>
<td>W (Weltanschauung) (Worldview)</td>
<td>= What is the outlook, mental framework, or image that makes this transformation meaningful? What are the values and assumptions in our view of the improvement?</td>
</tr>
<tr>
<td>O (Owners)</td>
<td>= Who has most concern for the system and has or could be granted the power to alter or stop the proposed transformation process?</td>
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<tr>
<td>E (Environment)</td>
<td>= What environmental factors might constrain and assist our improved situation in the future? What is the feasibility of the change?</td>
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Educational Importance and Applications
SSM may be difficult for some individuals to understand. In teaching such a methodology, one is teaching a way of thinking, not what to think (Checkland, 2000). Despite many drawbacks, SSM has been used in a number of contexts throughout the world (van de Water, Schinkel & Rozier, 2007). SSM is a simple process that can be used to address complex agricultural issues and plan programs. Most faculty involved in teaching, research, or
extension excel in a subject matter discipline that does not include training on program development theory, concepts, or related principles, thus the importance of involving people throughout the process may be overlooked. SSM can be used independently or combined with other methods in a pluralist perspective to research (Mingers, 2001). SSM is not a substitute for the scientific method, but a precursor to it. It ensures that the people component remains a key element of the program development and problem solving process.

References


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