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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.**

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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*.

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From the Editors

This summer edition of the journal includes the abstracts and membership awards and JIAEE awards from the conference held in San Juan, Puerto Rico on May 24-28, 2009. The conference theme was “25 Years of Strengthening International Agricultural and Extension Education.” We solicited “birthday letters” from the membership to recognize this notable achievement for the organization.

As we celebrate the birthday of our organization, it is important to reflect on how our organization, and the journal, has evolved over time. Dr. Jack Elliot, a former journal editor and president of AIAEE commented in his birthday letter:

Beginning the journal was a labor of love. The original journal white paper team of Satish Verma from Louisiana State University, Bill Seiders from the University of Illinois and me (then at Michigan State University) presented our work at the first AIAEE meeting held west of the Mississippi River in 1991 at St. Louis, Missouri. Wade Miller from Iowa State and Anne Fox from Oregon State were added to the team to form the first journal editorial board. The first issue of volume one was distributed during the 10th anniversary of the association. Some of the original strategies such as publishing the outstanding research presentations have been modified as the journal sought to improve its prestige within the journal world.

Today the journal includes editorial board members from throughout the world. As our organization has grown, the journal has also expanded to include a broader range of topics and authors. We look forward to our next 25 years!

If you would like to contribute to the development of the JIAEE, we are seeking a new managing editor. The term would begin in January, 2010. You will find a call for the managing editor at the end of this issue.

Sincerely,

James R. Lindner, Executive Editor and Kim E. Dooley, Managing Editor

Journal of International Agricultural and Extension Education
An Assessment of the Implementation and Outcomes of Recent Farmer Field Schools to Improve Vegetable Production in Trinidad and Tobago

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Abstract
Following major initiatives by the Commonwealth Agricultural Bureau International and Trinidad and Tobago’s Ministry of Agriculture Lands and Marine Resources, 14 Farmer Field Schools (FFS) were conducted from August 2003 to January 2006 in seven extension districts in Trinidad and Tobago, West Indies. This paper assesses these schools according to the six key elements highlighted by Simpson and Owens (2002) regarding the FFS approach in Africa. The researcher attended school field days and interviewed 12 master trainers. The researcher surveyed a population of 24 participants and a sample of 16 non-participants. The researcher interviewed six volunteer participants and observed the efforts of the central planning process over the course of a year. The school has relevance and responds to local concerns (Key 1). The school used participatory mechanisms which generated new knowledge regarding location-specific crop husbandry practices (Key 2). Information flows and farmer-to-farmer participation were usefully productive (Key 3). There is a new initiative to build useful organizational relationships (Key 4). Relationships between scientists, extension workers, and farmers improved (Key 5). The FFS can be integrated into existing programs but would need more administrative support and funding (Key 6). In one community, the FFS participants were different from a sample of non-participants in several ways. There were similarities between the findings of this assessment and those of Simpson and Owens (2002). Recommendations included the continued use of the FFS among small producers in Trinidad and Tobago, and further assessment of quantitative benefits, including the rates of adoption and diffusion and cost effectiveness.

Keywords: Farmer Field School Systems, Extension Program Effectiveness
Introduction

While the petroleum industry and financial service enterprises have provided stability to the Trinidad and Tobago economy over the past several decades, the agricultural sector had not fared as well. Trinidad and Tobago is dependent on agricultural imports to feed and clothe its million plus population (Ministry of Agriculture, 2006). Seepsersad (2003) stated, “The country is a net food importer; in 1999, the value of food imports was 181% of the value of food exports. There is a great deal of concern about national food security and household food security” (p. 6). Agriculture makes up about 2% of the country’s GDP and employs approximately 10% of the labor force. Dolly (2005) noted that a promising approach towards agricultural self-reliance and food security in Trinidad and Tobago is developing and using Farmer Field Schools (FFS). The FFS could improve production efficiencies among vegetable producers in the first instance while sustaining the agro ecological environment in which growers operate.

In the year 2000 the Commonwealth Agricultural Bureau International (CABI) began introducing the FFS approach to agricultural extension in the Caribbean region; including Trinidad and Tobago. Beginning in 2003, CABI and Trinidad and Tobago’s Ministry of Agriculture Lands and Marine Resources (MALMR) began to support widespread use of this method of experiential learning among the country’s small food crop producers. The Extension Training and Information Services (ETIS) of the MALMR facilitated two FFS in the Caura Valley community. The ETIS subsequently facilitated 12 more schools in 2005 and 2006 in seven other extension districts throughout Trinidad. Research in South Asia, Southeast Asia, and Africa has shown that FFS can provide an approach that “offers a much needed breath of fresh air and hope for the future” (Simpson & Owens, 2002, p. 411.) Little has been reported, however, of the impact of FFS in the Caribbean region.

Conceptual Framework

The conceptual framework of this study is based on Simpson and Owens (2002) six key challenges facing extension FFS programs: Relevance and response to local concerns; instilling systems learning and the generation of new knowledge; facilitating information flows and farmer to farmer communication; local institutionalization and organizational development; impact on relationships and consequent changes in relationships; and integrating the FFS into existing programs.

The FFS is an experiential learner-centered technique that provides opportunities for a person to engage in an activity, review it critically, draw some useful insight from an analysis, and apply the result to a practical situation (Gonsalves, et al, 2005). In the FFS, farmers attend weekly sessions on designated plots where they learn experientially. Facilitators demonstrate different cultivation practices and compare these practices with Integrated Pest Management (IPM). The school participants eventually determine the most appropriate and environmentally-friendly technologies for local vegetable crop production. These technologies are expected to reduce cost of production.

Participants at a workshop on farmer participatory methods for ecological crop management highlighted problems encountered by extension practitioners that may be redressed by FFS (Chung, 2000; Donis, 2000; Edwards, 2000; Gore, 2000; Magloire, 2000; Phillip, 2000; Ramroop, Hill, Dowlatlath, & Ganpat, 2000). Identified problems included: crop protection units in most countries are under-staffed and -funded, thus, are unable to cope with multiple possible pest control initiatives; extension links with farmers are still “top down” despite calls for more “bottom up” approaches; accompanying research is
lacking especially due to a shortage of funds; agricultural input suppliers dominate the transfer of pesticide technology; farmers still prefer to use broad-spectrum pesticides, which are readily available but do not easily focus on specific pest targets. Despite this prevailing situation, some farmers are becoming aware of newer target-specific pesticides and bio-pesticides. Finally, a lack of policy on IPM or any type of pesticide control prevails.

Functional mechanisms that impact on successful extension results are expected to transfer technology to and from farmers, mobilize farmers, help them to organize themselves, and educate farmers to build their capacity (Zijp 1999). In the case of vegetable producers in Trinidad and Tobago, the technology transfer mechanisms concern the role of IPM in cultivation practices. The FFS may be used to convey appropriate IPM methodology and other technologies to farmers. The FFS can effectively impact on successful extension. It is expected that FFS may eventually facilitate better extension–research linkages at reduced costs.

Munuya (2003) has classified five sets of factors which generally affect the technology transfer related to IPM as follows: Government policy and regulations, IPM as a process of social learning, psychological factors in adoption, delivery systems for IPM, and training. Bonzo and Radhakarrishna (2005) noted the value of the FFS in providing farmer participatory research and small farmer group associations among a large group of small farmers in Indonesia. The suggestions of Bonzo et al (2005), Munuya (2003) and Zijp (1999) concerning Farmer Field Schools (FFS), extension impact and the role of IPM were taken into account and were modified to reflect the recognition of the six key issues identified by Simpson and Owen (2002). These issues need to be resolved if the FFS is to be an effective vehicle for transfer and acceptance of technology in Trinidad and Tobago.

In Trinidad and Tobago, farmers typically engage in crop cultivations that tend to use more pesticide and fertilizers than is required. It is not unusual for farmers to use agrochemical cocktails containing up to four or five different pesticides in unwarranted application routines (Dolly, 2000). This undesirable practice presents a severe threat to the agro ecological environment and incurs more economic cost to a country that does not produce most of the inputs that are applied during cultivation.

CABI’s activities began with a training workshop in which international experts from the Philippines, Kenya and Nicaragua engaged crop protection specialists, extension, and university personnel. The local experts became familiar with the concept of participatory methodologies, recent approaches to integrated pest management (IPM), and the practice of a field school.

Following an initial workshop in August 2000, the Commonwealth Agricultural Bureau International (CABI) and the Food and Agricultural Organization (FAO) with funding from the European Union (EU) conducted a Training of Trainers workshop among the representatives from the Dutch, French, and English-speaking Caribbean. Trinidad and Tobago’s Ministry of Agriculture, Lands and Marine Resources (MALMR) hosted the event and facilitated an FFS from August to December 2002. This FFS occurred in Aranguez, a major vegetable-growing community located in the north west of the island of Trinidad. Trainers were expected to return to their respective national locations and implement field schools. Graduate trainers of the MALMR formed a committee for the promotion of farmer participatory approaches in Trinidad and Tobago. Until January 2006, this committee had presided over 14 schools in Trinidad.
Table 1 juxtaposes Simpson and Owens (2002) challenges facing extension FFS programs with problems identified by Dolly (2005) that may be improved by implementing FFS in Trinidad and Tobago.

Table 1

Key Extension Challenges of Simpson and Owens (2002) in Relation to a Situational Analysis

<table>
<thead>
<tr>
<th>Key Extension Challenges of Simpson and Owens (2002)</th>
<th>Situations which the FFS may improve based on reports of Caribbean Practitioners, FFS experiences in other countries and expectations for Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance and Response to local concerns.</td>
<td>Too many pest control problems, Excessive use of inputs. High cost of pesticides and other inputs. Need for appropriate technology.</td>
</tr>
<tr>
<td>Instilling Systems Learning and the Generation of new knowledge.</td>
<td>Lack of knowledge of IPM &amp; the Agro ecological systems in which cultivation occurs.</td>
</tr>
<tr>
<td>Facilitating Information flows and farmer to farmer communication.</td>
<td>Unwarranted ‘Top Down Approaches’ Limited information gathering and sharing among farmers.</td>
</tr>
<tr>
<td>Local institutionalization and organizational development.</td>
<td>Underfunded and Understaffed institutions, Lack of Policy, Lack of Farmer Group initiative.</td>
</tr>
<tr>
<td>Impact on relationships and consequent changes in relationships.</td>
<td>Weak linkages between Extension, Research and Farmers.</td>
</tr>
<tr>
<td>Integrating the FFS into existing programs.</td>
<td>Weak mechanisms between new programs and traditional ones.</td>
</tr>
</tbody>
</table>

**Purpose**

The purpose of this paper was to assess these 14 FFS in Trinidad and Tobago from the perspective of the Simpson and Owens (2002) six key elements facing extension programs and FFS. These are: relevancy and responsiveness of FFS to local concerns, systems learning and the generation of new knowledge, information flow and farmer to farmer communication, institutionalization and local organizational development, changes in relationships, and the integration of the FFS into existing programs.

**Methods**

During the period 2000 to present, the researcher recorded many observations while the participants conducted agro-ecological systems assessments (AESA) among different regimes of crop production practices regarding tomato, cabbage, eggplant, and sweet peppers. These crops are of economic importance. Vegetable production regimes related to current farmer
practices, variety trials, fertilizer trials and IPM practices were the subject of observations during the FFS. Different cultivation environments from seedling establishment to harvest became bases for comparisons from which appropriate and low cost practices could be derived by consensus. The researcher interviewed all 12 participants who attended the master trainers workshop held in the vegetable growing area in Aranguez, Trinidad at a closing evaluation session held on 15th December, 2002.

The researcher surveyed a population of 24 participants who attended a second field school in the Caura Valley and a random sample of 16 non-participants from the environment in which the school was conducted. The researcher conducted interviews during a two-week period after the second school of August to November 2003. The valley has a recorded population of 70 small producers, of which 45 were active. Therefore, from the active population, 53% (24) attended the school. The random sample of 16 non participants represents approximately 36% of active growers. Both populations were questioned about their knowledge of IPM production practices, impressions about the FFS and related issues. The researcher conducted focused interviews with six volunteer participants who were prepared to speak about their experiences during the FFS.

The researcher became a member of the farmer participatory approaches committee of the Extension, Training and Information Services of the MALMR. The researcher made observations of the committee’s FFS initiatives while attending monthly meetings. The researcher studied recorded minutes of twelve monthly meetings during 2005. The researcher also observed the activities of the Caura Valley Farmers Association (CVFA, 2004) which had a central role in organizing the field schools in the Caura Valley. The researcher attended five field days of five schools which occurred during 2005.

Results and Discussion
The findings related to each of the six key issues identified by Simpson and Owens (2002) is presented below.

Relevance and responsiveness of FFS to local concerns
From the responses of the master trainers, participating farmers and members of the farmer participatory approach committee, the FFS engaged an understanding of current pest and nutrition problems and the ways to resolve them in the local environment. Participants acquired skills to identify pest and natural enemies which could replace costly pesticide applications. They understood how pests continued their invasions as the crop matured. They began to understand alternative pesticides which were made of biological material and which could be manufactured by them from indigenous material in the local environment. The farmers appreciated the need for environmentally friendly approaches and began to implement these approaches in their day to day cultivations.

The farmers became more mindful of detailed field inspections and have begun to put in place superior daily inspection regimes instead of the cursory glances they usually make. They accepted the need for soil testing in order to “know what you are dealing with”.

These FFS outcomes indicated a potential to respond to local concerns in which local initiative can provide alternatives to more expensive pest-control solutions among numerous pests attacks. This was similar to a finding of Simpson and Owens (2002) in Africa.

Systems learning and the generation of new knowledge
The farmers became more aware of an agro-ecological system in which pest
could be differently defined especially within the context of harmful and beneficial insects and weeds. They better understood how an agricultural environment could be tinkered with in order to obtain a healthier crop. Some farmers began to conduct experiments which could generate the desired intelligence or knowledge for their own subsystems within agro ecological environments. Some producers tried their own methods of biological control. Others tested cultivations without applying chemical fertilizers and pesticides and with the use of mulches made from newspapers and other locally available material. They became confident in their own investigative abilities.

All stakeholders began to share a common vocabulary with regard to crop husbandry techniques. The farmers were now willing to use language which once seemed to only emanate from a formal research effort. Likewise the scientists and extension officers were prepared to adopt alternative terminology which would mutually benefit higher standards of crop husbandry.

A more useful participatory mechanism had begun to generate the knowledge needed to care for the crops in specific agro ecological systems. Simpson and Owens (2002) similarly reported that FFS participants in Africa had begun their own experiments and understood a systems approach to the dynamics of insect pest populations and the physiological life cycle of plant needs. Although African counterparts had conducted experiments, Simpson and Owens felt that participants did not understand what an experiment really entailed. In Trinidad, this understanding was very apparent and was attributed to the level of schooling which participants have attained.

Information flow and farmer-to-farmer communication

Farmers felt more confident to share information with the input suppliers, IPM specialists, and extension workers. The information shared was through a “to and from” process rather than the typical “top down from the extension office scenarios” to which all were accustomed. The farmers noted that it was typical only to know about the “bad” products they used. However, since their exposure to the school, participants have recognized options regarding appropriate replacements.

Farmers became even more aware of how community members generally do not share information among themselves. Yet the participatory experiences during the school made them more confident to illustrate the value of sharing information. There became an unwritten and valuable feeling that information locked is information wasted. The gestures of sharing and critiquing one another’s viewpoint during the FFS exercises influenced a new prowess to share knowledge more freely and to be secure about one’s own approach to crop husbandry. All participants felt confident that they could listen to their farming colleagues, if these were trained as facilitators.

Participants felt that non-participants missed an excellent opportunity to begin to share information more freely. The participants intended to pass on to non-participants what was learnt at the school. Some recommended that researchers specially investigate why farmers are not always beneficially interacting with one another. Interviewed non-participants from the Caura Valley reported a willingness to listen to their colleagues with regard to IPM methodologies.

In most of the FFS farming communities, males usually dominate views regarding resolutions to pest problems. During the FFS, however, females became more confident in sharing their ideas on matters which they would have normally kept to themselves. Some intended to take information back to household members who did not attend. Some participants and non-participants reported that they usually
share cultivation methodologies with community members. These are early indications regarding the potential for farmer-to-farmer information flows. More investigations are recommended to validate these observations. Some farmers noted that they were more confident to discuss pest invasions with local pesticide agencies.

The participants noted that the school did not generate convincing factual information about reduced cost of production in relation to profitable yield. They noted that this would be a major conduit for information sharing among community members given their business objectives. Simpson and Owens (2002) reported that in some African contexts the production savings were articulated and resulted in information flows leading to the adoption of alternative techniques.

**Institutionalization and local organizational development**

Evidence regarding institutionalization and local organizational development emerged mainly from the committee meetings of the MALMR and observations of the activities of the CABI. A persistent item for discussion at committee meetings was the current lack of research support in order to provide technical assistance that can help validate and further test new and emerging local practices. This support must be present in order to identify diseases, test changes in soil texture and composition, assess new innovations, identify and culture natural enemies, and detect requirements for the smooth transition to the limited use of chemical pesticides. Even though the Caura Valley Farmers Association (CVFA) is represented on the national committee, this institution has relinquished a frontline advisory responsibility for IPM practices to the MALMR. Additionally, initial relationships with input suppliers have also waned. The MALMR is unable to fill this void completely.

In interviews with master trainers, they predicted the difficulty to maintain sustained technical assistance that will be required and that the committee meetings are now experiencing. The trainers were familiar with the understaffed and underfunded crop protection units which would be unable to provide technical services to the FFS.

For a successful school, there must be strengthened relationships between the frontline services of the typical extension system and research units of the MALMR. The committee promoted itself among the fraternity of staff in the MALMR and was able to obtain additional funds in order to employ an extension officer to specially work with schools within a county. The committee was able to aggressively encourage new schools. The committee recognized the importance of a sensitization process among their extension colleagues and the MALMR research staff. These facts underscore the importance of local organizational development in order to maintain the schools.

The CVFA seeks the interest of all members of the Caura Valley village community. The group has a special women’s arm which serves the interest of women. The group actively seeks funds to continue numerous self help projects which are of benefit to the valley. The CVFA jointly participated (with extension workers and scientists) in visits to schools in other extension districts.

When visiting other schools and interacting with other farmers, CVFA members demonstrated remarkable intelligence and leadership regarding the conduct of the FFS and topics of mutual interest. The CVFA was able to launch an innovation where members school themselves in an expansive poly culture cultivation of eight crops within an agro ecosystem and with the use of IPM. The CVFA generated support from a FAO project and a United Nations Development Program project.
None of the remaining schools were supported by the involvement of a farmers’ group. It will be important to engage the group dimension in the institution process. CVFA’s initiatives are instructive to organizational development that could sustain the FFS. One member of the CVFA became a member of the FFS committee of the Extension Training and Information Services in January 2006. It should be probable and possible to include greater farmer representation on this committee and representation of private input suppliers and other stakeholders within the industry.

By comparison, Simpson and Owens (2002) reported the FFS ability to mobilize initiatives where there were no existing structures as in the case of the developing FFS committee of the MALMR. Where there were previous structures, the FFS group identity quickly disappeared. The CVFA initiatives attested an alternative trend which a previous structure may develop.

Changes in relationships

Farmers felt more at ease in communicating with University of the West Indies personnel, input suppliers, and the local extension officer. They felt more confident in interacting with their own colleagues, even those who did not participate in the schools. They attributed changes in relationship to the type of counseling in which they were engaged during the group dynamic sessions. These sessions were routinely included during the weekly field events of the school. The farmers lauded the efforts of facilitators in helping to develop the type of confidence they now have in dealing with personnel who had much formal education. To quote one male farmer, “I feel confident to explain to a person on any level with big words or small words.”

Many farmers noted that they have never spent such relatively high percentages of time with the extension workers and other stakeholders. They appreciated the feedback they were receiving about current field problems. For instance, there were immediate attempts to investigate further pests and disease pathogens by encouraging and training farmers to establish “insect zoos” in order to learn the behavior of insects within the agro-ecological system.

Owens and Simpson (2002) also concluded that FFS had a positive impact on the relationships developed among stakeholders. They alluded to the expectations that the farmers still looked towards traditional relationships which were additional to those of the FFS. This was the same result among the participants in Trinidad and Tobago.

The integration of FFS into existing programs

Participating farmers reported that the process provided a new opportunity to create direct linkages between themselves and researchers, resulting in increased awareness and collaboration. Participants agreed that the process improves field visiting and the conduct of the traditional result demonstrations. They believed that the process also provides an opportunity for joint ownership of discoveries and publications. The school provided a conduit for emphasizing the new requirements for marketing as set out by local and international trading, especially for niche markets.

To have sustained integration, master trainers recommended further effective outreach to entire farming communities. Non-compliance among some community members can still affect the agro ecological system of an entire area. The trainers cited a lack of permanent funding as a possible impediment to encourage more farmers. Among the schools there is generally no funding formula in place for a more sustained effort. Nevertheless, sustained funding mechanisms have begun in some districts and must be vigorously pursued in all. One school sold its tomato crop in an effort to gain funds for a future school.
Technical agencies can share personnel cost through initial incremental contributions, which may be eventually weaned. Indigenous funding efforts would stimulate positive government policy and would minimize a return to traditional reliance on Government funding among researchers, farmers, extension workers, and administrators. The FFS must demonstrate the cost effectiveness of the schools.

**Specific Findings among the Caura Valley Farmers**

Caura Valley participants were similar to their non-participant counterparts in several ways. Neither group kept appropriate farm records. All schools conducted thus far had demonstrated the value of record keeping and farmers responded well to the appropriate forms of record keeping that were used. The school can therefore help to improve the record keeping behavior among small producers such as those in the study.

There were less than 50% (range 12-38%) of the Caura Valley participants who sought advice from expected sources such as the area’s extension officer, the agribusiness shop, neighbors, and relatives. Yet those who participated reported an ability to speak more easily with the extension officer, the agribusiness shopkeeper, and university personnel following the conduct of the schools. This circumstance underscores the improved communication flows that the schools are developing.

There were more females among participants than among non-participants. The participants had a mean age of 44.75 years, which was ten years younger than the non-participants. The mean lengths of time that participants and non-participants farmed in the valley were respectively 19.46 and 27 years. The FFS attracted a younger participant who may understand more long term implications in vegetable production. Females will tend to accept strategic and practical opportunity such as the FFS more readily than males.

Reported mean monthly farm family incomes for both groups were $TT 3,409.52 (participant) and $TT 3,197.5 (non-participant). Yet mean monthly expenditures were respectively $TT 2,516.27 and $TT 1,883.33. The participants therefore reported spending more money on a monthly basis and may have been more easily attracted to what appears to be a new cost effective idea such as the FFS. ($TT6.31=$US1.00 January 2006).

Radio was the most common communication facility that farmers owned. Very few participants and non participants owned cell phones or had access to cable television. Smaller percentages of non participants owned communication facilities. Outreach activities to engage attention must understand the status of communication resources among the farmers.

Those who did not attend the school reported that they were not prepared to afford the time during three months of cultivation. Some felt they don’t need the training. Some did not know about the activity.

**Implications**

Table 2 presents the implications of this assessment in relationship to Simpson and Owens (2002) challenges facing FFS, current extension practice in Trinidad and Tobago, experiences in Africa and other experiences.
<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary of FFS Outcomes in Trinidad and Tobago (T&amp;T) and Lessons Learned</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FFS challenges of Simpson and Owens (2002)</th>
<th>FFS outcomes among 14 schools in T&amp;T</th>
<th>Comparing reported African and other experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance and response to local concerns.</td>
<td>Producers used the FFS to simultaneously resolve numerous pest problems by using integrated solutions, and incorporating locally based technologies</td>
<td>New locally based solutions in Africa had cost savings which led to widespread adoption. In T&amp;T the FFS must still demonstrate cost savings in order to influence widespread adoption.</td>
</tr>
<tr>
<td>Instilling systems learning and the generation of new knowledge.</td>
<td>All stakeholders obtained a better appreciation of the agro-ecological system (AES) in which vegetables are cultivated. Producers are better able to apply an IPM system.</td>
<td>This is a similar finding in Africa alongside a commitment to life-long learning about the AES. Additionally T&amp;T producers generated new knowledge through their own experiments.</td>
</tr>
<tr>
<td>Facilitating information flows and farmer to farmer communication.</td>
<td>Top-down approaches were exchanged for bottom-up ones. Information flows were improved.</td>
<td>There was a constraint which African village elders imposed on info sharing. Initial evidence in T&amp;T suggested a motivated client who became keen to share knowledge and who is ready to contribute ideas to new solutions.</td>
</tr>
<tr>
<td>Local institutionalization and organizational development.</td>
<td>New committees representing farmers, agents, and researchers demonstrated better successes. A more focused “technologies transfer unit” is becoming apparent in the local MALMR. The unit has the potential to sustain the FFS</td>
<td>Bonzo et al. (2005) demonstrated farmer group leaders were eager to dialogue with the government after the FFS. Braun, Thiele, and Hernandez (2000) demonstrated FFS sustainability through farmer research committees which had similar objectives as in T&amp;T.</td>
</tr>
<tr>
<td>Impact on relationships and consequent changes in relationships.</td>
<td>Farmers feel confident to develop productive relationships with all stakeholders. More “to and from” relationships are occurring.</td>
<td>Zijp (1999) ascertained this requirement for technology transfer. In both Africa and T&amp;T there are improved constructive relationships between agents and farmers. However such relationships needed more staff and costly resources.</td>
</tr>
<tr>
<td>Integrating the FFS into existing programs.</td>
<td>Integrating mechanisms can link with marketing standards, farmers, and consumer groups.</td>
<td>These mechanisms are neither in Africa nor T&amp;T. They should be pursued.</td>
</tr>
</tbody>
</table>
Educational importance and applications

The Farmer Field Schools had relevance and responded to local concerns regarding the need for more appropriate technology to preserve the agro-ecological environment in which the farmers cultivate vegetables. The school engaged a useful participatory mechanism among scientists, extension staff, and producers which generated new knowledge regarding crop husbandry practices in agro-ecological zones. Despite traditional reluctance to share information, communication flow in farmer-to-farmer participation became evident.

There is a new initiative to build useful organizational relationships made especially evident by the formation of a special committee to support and facilitate schools. The FFS can be integrated into existing programs but would need more administrative support and funding. According to van de Fliert and Braun (1997), the achievement of impact in any extension technology-transfer endeavor requires qualitative and quantitative changes. Qualitative changes concern farmer capacities, practices, collective action, and support systems. Quantitative changes concern reaching a considerable number of people and generating income.

Much qualitative change has occurred during the conduct of these schools. There is an increase in the capacity of the farmer to better understand the agro-ecological environment. A consequence is a better chance to use less costly chemical pesticides and other inputs. Collective action has improved and support systems more easily complement and facilitate decision-making among producers with regard to vegetable production techniques.

More schools would need to be conducted in order to assess quantitative changes regarding diffusion, adoption, and cost effectiveness. A study in Indonesia and the Philippines indicated that the FFS approach did not shift the cost of the exercise from the customary public purse to the farming community (Quizon, Gershon, & Rinku, 2001). Another study (Quizon, Rola, & James, 2002) found that while there is very little diffusion of FFS knowledge from school graduates to other community members, graduates were retaining their FFS-acquired knowledge. Gershon, Murgai, and Quizon (2004) concluded that there were useful qualitative changes, such as the ones reported in this study. Yet there was no significant diffusion of knowledge to other farmers who resided in the same village. Most of the farmers who partook of the FFS in Trinidad and Tobago were the core group of producers with whom the extension service frequently relates. Now that this relationship has been enriched, it becomes incumbent to attract a larger number of producers to the FFS.

The researcher recommends studies regarding quantitative changes as a result of the FFS in the Caribbean. These could be accomplished as more schools are conducted in the ongoing initiatives to introduce the methodology to the region.

The FFS is a justified educational and training activity. The FFS has the ability to inform intelligence for appropriate environmentally friendly technologies. The FFS successfully facilitated learning so that a population of vegetable producers from Trinidad and Tobago understood and practiced IPM. The school’s philosophy and method can be encouraged and tested among small producers in other parts of the country and in the rest of the Caribbean where there are similar types of producers.

References


Internationalizing Leadership Development: Important Components within Educational International Leadership Experiences

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Abstract

The purpose of this study was to identify the most salient components to be included in an international leadership experience. A three round Delphi procedure was used to solicit expert opinions concerning the aspects needed to provide an effective international leadership experience. Results revealed a variety of important components that broke down into two categories: knowledge gained and concrete experiences. Specifically, the five highest rated knowledge components were: respect for other cultures; effective global interaction; critical thinking about leadership models students embrace; recognition of the interconnection between different contexts and an acquaintance with local indigenous people. The top five concrete experiences were: multicultural experiences focusing on local values; interaction with local students; frequent debriefing, personal logging and self-reflection through the process; incorporation of three learning stages – prework, experience, postwork – within the overall experience and a gamut of specific encounters with what is working in the local society and what is not. Educators may consider these expert suggestions when developing curriculum or coursework for international experiences focused in leadership, whether for traditional students, non-traditional students or Extension agents. Ideally, incorporation of these factors into leadership programs will encourage the development of more globally minded leaders.

Keywords: international experience, Delphi, leadership, concrete experience, curriculum development, global mindedness
Introduction & Conceptual Framework

Today’s world is a global society. Through ever-advancing communications and technology, the Internet, and other modern conveniences, individuals can connect with each other across states, countries and even continents. These advances have permanently changed how society interacts; as a result, it is imperative that today’s students and future employees have useful global perspectives and competencies. Graduates should not only be able to work with diverse cultures and people, but should also have a good grasp on worldwide issues and events, in order to compete in an increasingly global society (Irani, Place, & Friedel, 2006; Navarro, 2004).

As such, the ability to develop competent, principle-based leadership is a major challenge facing businesses in today’s culturally diverse, global society (Marsh & Johnson, 2005). Many of today’s students do not have the knowledge or skills to effectively lead within a global setting – which is of particular importance to present employers of colleges of agriculture graduates, who expect their future hires to have the diverse knowledge, skills and understanding that equip them to work in today’s global workplace (Irani, Place, & Friedel, 2006). In addition, the need for internationally aware students is demonstrated through our security, trade and cultural relations with other countries. These forces need globally savvy leaders, given that “…one in six U.S. jobs is directly tied to international trade” (Bruening & Shao, 2005, p. 48).

For all of these reasons, the responsibility to internationalize educational curricula has been a frequent topic of interest over the last 30 years. Of late, agricultural education has integrated a wide variety of international components into its educational programs (Wingenbach, Chmielewski, Smith, Pina, Jr., & Hamilton, 2006). In 2002, the Association of Governing Boards of Universities and Colleges in Washington, DC asserted that teaching and research with a global perspective was more important than ever (Jenkins, 2002). Furthermore, a priority from this report included supporting faculty to develop international curricula within their field of expertise. Even earlier, science instructors were being encouraged to make their classrooms more globally and culturally aware – such as through discussions about endemic (localized) versus pandemic (world-wide) diseases and global control of these diseases (Elashkar, 1994).

As Petrucci (1999) outlines, leadership curriculum development can take on many forms, depending upon the audience of interest. There are three levels of understanding, depending upon the institutional context under which it was implemented.

First, leadership development may be conceptualized as the preparation of individuals who will literally lead in the world marketplace. Many business schools across the U.S. and Europe have developed programs that specifically target individuals who see themselves as “global leaders” due to the fact that they operate at an international level.

Second, leadership development can be focused in the national arena. Generally we find two types of nationally focused programs – those focused on corporate America and those focused in the public sector. Programs for corporate America have dramatically increased in the last 20 years, due to the global revolution in business leadership. Those programs focused in the public sector are primarily interested in ways political leaders can affect the quality of national leadership.
Finally, leadership development can be targeted at individuals who see themselves as the upcoming leaders in local communities. Smaller colleges and universities have been particularly effective in linking community service to leadership development because of the assumption that local leaders play a critical role in keeping communities thriving.

Within each of these levels of understanding, there are important characteristics and needs that the leadership educator needs to work toward when designing appropriate curriculum. However, as Petrucci (1999) continues to note, as the world continues to become more global, the labor force more mobile and less loyal, and more culturally savvy, these distinctions become more and more blurred.

Nonetheless, instilling leadership skills within students assists in providing another value-added characteristic that will allow for better global competition with their peers. “Co-curricular” activities (those activities outside of the classroom that have educational value) are becoming more deliberate and range from leadership development certificates to leadership internships to service-learning projects such as improving the water supply in Honduras (Clough, 2008). Increasingly educational opportunities are looked upon to provide contextual knowledge, as well as knowledge of the world around them. It is imperative that today’s leadership students are exposed to leadership training and development that integrates more contemporary international perspectives and issues. One of the most effective ways for students to acquire these perspectives is by traveling abroad – or more relevant to this document, participating in an embedded international experience (Brooks, Frick, & Bruening, 2006).

An “embedded international experience” can be defined as a type of international field trip designed to take place during a course, with the primary intent to provide an experiential learning experience outside classroom walls (PSU International Programs, 2008). This type of brief experience is planned to be an integral part of the course, one for which the substantive content is provided within the United States. As exciting and potentially necessary as these international experiences are, as leadership educators, how do we know what an embedded international leadership experience should entail? It was precisely this question that led to the study at hand – what are the specific components, which should be included within the actual (embedded) international leadership experience?

**Purpose & Objectives**

The purpose of this study was to develop a consensus document that would identify the most salient components or aspects that should be included in an embedded international leadership experience. The objective of the study was to identify and clarify the most important elements that comprise an effective international leadership experience, as identified by leadership and international experts within the field.

**Methods**

This national study used the Delphi technique to identify important components to be included in an international leadership experience. Operationally, the Delphi procedure is designed to systematically solicit expert opinion. A structured process is used to collect and refine data from a collection of experts by means of a progression of questionnaires interspersed with controlled opinion feedback (Adler & Ziglio, 1996). By using a Likert-style questionnaire to garner feedback in the final two iterations, this methodology is able to bring experts to a consensus and facilitates the formation of group judgment. An 80% level of agreement was established *a priori* as the measure necessary for statements to
move from one round to the next and for statements in round 3 to achieve consensus (Moreno-Casbas, Martin-Arribas, Orts-Cortes, & Coment-Cortes, 2001; Morgan, Rudd, & Kaufmann, 2004; Simon, Haygood, Akers, Doerfert, & Davis, 2005; Stitt-Gohdes & Crews, 2004).

Other researchers have noted the Delphi technique is particularly effectual in reaching consensus from a purposively selected group of experts (Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). When selecting the expert participants, one overall expert in each of five leadership areas (agricultural, business, community, collegiate (student activities), international) was asked to nominate individuals they would consider leadership or international experts in their leadership field of interest. Twenty-eight names were provided by the original five experts; after a formal introduction and request to participate in the study, three individuals declined, for an overall participant pool of 25 leadership experts. A Delphi panel consisting of 9 yields a reliability of 0.70 and 13 a reliability greater than 0.80 (Dalkey, 1969).

The Delphi technique used for this study included three rounds. The first round was used as a modified brainstorming session; participants were emailed the open-ended question: What are the most important components of an international leadership experience, as it plays a part within a college course? Eleven individuals (11/25 = 44% response rate) responded to the first round. The responses from the first round were categorized to develop statements for round 2. These statements were then incorporated into a questionnaire and were uploaded to a secured website on the University of Georgia server. Participants were emailed the link to click on to enter the questionnaire, which (when completed) was automatically emailed back to the researchers. While this allowed for confidentiality of responses, participants were assigned a unique participant number in order to track responses (and avoid sending out duplicate emails).

Operationally, each of the three rounds of the Delphi were designed with similar timelines. Panel experts were notified to participate using a modified Tailored Design Method (Dillman, 2000). The first email sent out summarized the study and respectfully requested participation. Once those who asked to be removed were taken off of the study list, round 1 commenced. By design, each round was given about a two-week timeline. During each round, the first email was sent at the beginning of the week, with specific directions on how to participate in that round, as well as a deadline (generally seven days after the initial email). Once the deadline had passed, a reminder email was sent to non-respondents with the same directions and a new deadline (another seven days after the reminder email – ultimately equaling two weeks). After all of the responses were received, the data were analyzed and applied to the next round.

A five point Likert scale (5 = Strongly Agree, 4 = Agree, 3 = Uncertain, 2 = Disagree, and 1 = Strongly Disagree) was used in the questionnaires for rounds 2 and 3. Throughout each round, participants were asked for any comments that might further explain their opinions, or develop the components within the study. In round 2, 14 individuals responded for a response rate of 56% (14/25 = .56). The responses were analyzed and those statements yielding an 80% or higher level of agreement were retained for round 3. In round 3, participants were asked to confirm their responses from round 2. Twelve participants responded to the final round, for a 48% response rate (12/25 = .48).

Data were analyzed using descriptive statistics. Data collected using the Likert-type scales were considered interval data and as such, were reported as means and standard deviations. All data were analyzed using SPSS software.
Results
The Delphi began with an open-ended question survey for the first round. The original question posed was:

What are the most important components of an embedded international leadership experience, as it plays a part within a college course? (These components should be something the students cannot experience on campus, unique to the program.)

Participants were not given a limit to the components they could list – nor were they given a direction as to the type of items to include (it was determined that operational (concrete experiences) as well as knowledge both played an important role in the international leadership experience). This resulted in a diversity of answers received.

Round 1 generated 59 responses (aspects) considered important within international leadership experiences. These 59 aspects included both knowledge and concrete experiences that were considered important, and ran the contextual gamut – from political to social, local food and culture to local ethics and values, from historical to current social problems. All of these illustrated a depth and breadth to the knowledge ideally garnered through international experiences.

Due to some repetition and need for clarity, 59 components were distilled down into 42 Likert-style statements which formed round 2 of the survey. After analyzing the responses from round 2, 14 components averaged below the “Agree” level. Therefore, 28 components with a mean value of 4.00 or higher were selected to be carried on to create round 3, the final round of this survey. In round 3, participants were asked to confirm their responses from round 2 (See Table 1).

Table 1

Delphi Study Round 3: Likert Statements for Recommended Components of an International Leadership Experience (n=12)

<table>
<thead>
<tr>
<th>Component Statement</th>
<th>M</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>An international leadership embedded experience should:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourage students to understand and respect other people and cultures vastly different from their own</td>
<td>4.67</td>
<td>.49</td>
<td>4</td>
</tr>
<tr>
<td>Provide opportunities for students to experience cultural differences that challenge personal values, beliefs and practices.</td>
<td>4.67</td>
<td>.49</td>
<td>4</td>
</tr>
<tr>
<td>Prepare students for interacting within a global society.</td>
<td>4.67</td>
<td>.65</td>
<td>4</td>
</tr>
<tr>
<td>Interact with students/peers of another culture</td>
<td>4.67</td>
<td>.49</td>
<td>4</td>
</tr>
<tr>
<td>Encourage students to think critically about the conditions and assumptions of the leadership models they embrace – democracies, monarchies, dictatorships, etc. – and take note at how this influences leadership in the study country</td>
<td>4.58</td>
<td>.51</td>
<td>7</td>
</tr>
<tr>
<td>Include frequent debriefing, to encourage personal logging, as well as self-reflection during the experience</td>
<td>4.58</td>
<td>.66</td>
<td>7</td>
</tr>
<tr>
<td>Include a “pre-work” experience where students are provided with in-depth information to gain a knowledge of mental models, world, view and openness to different perspectives regarding the study country</td>
<td>4.58</td>
<td>.51</td>
<td>7</td>
</tr>
<tr>
<td>Encourage students to recognize the interconnectedness of historical, political, social, economic and cultural contexts</td>
<td>4.55</td>
<td>.52</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Scale</th>
<th>Uncertainty</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include three learning stages: pre-work (background), the experience, post-work (reflection)</td>
<td>4.50</td>
<td>.67</td>
<td>10</td>
</tr>
<tr>
<td>Include a breadth of experiences – what is working within society and what is not (poverty, housing, environmental degradation)</td>
<td>4.50</td>
<td>.67</td>
<td>10</td>
</tr>
<tr>
<td>Include a “post-work” experience including extensive self-reflection (particularly on personal logs)</td>
<td>4.45</td>
<td>.68</td>
<td>13</td>
</tr>
<tr>
<td>Be exposed to and develop a knowledge related to local indigenous people to the area</td>
<td>4.45</td>
<td>.68</td>
<td>13</td>
</tr>
<tr>
<td>Engage the student in the local social system, to reinforce communication styles within the local culture</td>
<td>4.45</td>
<td>.68</td>
<td>13</td>
</tr>
<tr>
<td>Encourage students to gain an understanding of the connection between culture and leadership, along with ethics in another culture</td>
<td>4.33</td>
<td>.65</td>
<td>17</td>
</tr>
<tr>
<td>Assist in developing student knowledge of the differences and nuances of international work environments, and how to work within these situations</td>
<td>4.33</td>
<td>.77</td>
<td>17</td>
</tr>
<tr>
<td>Engage the student in personal internal reflection, as if to answer the question “Who am I as a leader and what am I becoming?”</td>
<td>4.33</td>
<td>.49</td>
<td>17</td>
</tr>
<tr>
<td>Have clear learning goals from the experience</td>
<td>4.33</td>
<td>.49</td>
<td>17</td>
</tr>
<tr>
<td>Allow for attendance at a cultural event – as an illustration of the larger social system</td>
<td>4.27</td>
<td>.78</td>
<td>19</td>
</tr>
<tr>
<td>Support students in learning how to share appropriate information in international settings</td>
<td>4.27</td>
<td>.64</td>
<td>19</td>
</tr>
<tr>
<td>Encourage students to take responsibility, both throughout the experience, but also in using the experience as a learning opportunity</td>
<td>4.25</td>
<td>1.13</td>
<td>20</td>
</tr>
<tr>
<td>Allow for students to network with different individuals in educational institutions, industries, and organizations within the county to share ideas, perspectives and explore leadership issues impacting the country</td>
<td>4.17</td>
<td>.57</td>
<td>25</td>
</tr>
<tr>
<td>Provide possibilities for students to develop effective global communication skills</td>
<td>4.17</td>
<td>.71</td>
<td>25</td>
</tr>
<tr>
<td>Encourage individual student development of a world vision of information, including the nature and scope of global problems</td>
<td>4.17</td>
<td>.57</td>
<td>25</td>
</tr>
<tr>
<td>Allow the student enough time in the country to build relationships and be immersed in the culture</td>
<td>4.17</td>
<td>.71</td>
<td>25</td>
</tr>
<tr>
<td>Encourage self-reflection and thought about impact through journaling throughout the experience</td>
<td>4.17</td>
<td>1.03</td>
<td>25</td>
</tr>
<tr>
<td>Provide opportunities for students to apply leadership theories and practice within an international setting</td>
<td>4.00</td>
<td>.95</td>
<td>26</td>
</tr>
<tr>
<td>Provide opportunities to talk with leaders in other cultures about their leadership experiences (as followers and leaders)</td>
<td>4.00</td>
<td>1.04</td>
<td>27</td>
</tr>
<tr>
<td>Provide opportunities for the student to observe leaders in action in other cultures (i.e. shadowing leaders, observing local leaders communicating with their public/organizations, etc.) to encourage knowledge of actual business/working environment</td>
<td>3.92</td>
<td>1.16</td>
<td>28</td>
</tr>
</tbody>
</table>

**Note:** Scale: Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2, Strongly Disagree = 1

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Within the final round, the top four statements formed a pretty tight race. Participants agreed that the top four components within an international leadership experience should be to encourage students to understand and respect different cultures, provide opportunities for students to experience cultural difference that challenge personal values and beliefs, prepare students for interacting with a global society, and to encourage interaction with students or peers from another culture. The top three statements were a confirmation from round 2, and stayed in the same order of priority. All of these statements had a mean value of 4.67. Following closely were the statements in a three-way tie for 7th place, each of these with M = 4.58. These statements included encouraging critical thinking about the leadership models they (students) embrace, and two more concrete experiences – including frequent debriefing, logging and self-reflection during the experience, and providing extensive “pre-work” prior to the experience. As you can see through these statements, participants placed a lot of value upon learning about culture and interaction through an international leadership experience.

There was only one statement that didn’t average at least an “Agree” (M = 4.00) consensus within round 3. This statement involved providing opportunities for students to observe leaders in action in other cultures, and only had a mean value of 3.92. Due to the lack of consensus on the importance of this statement, it was decided to remove this component from the final list.

In reviewing the statements and ideas presented by the experts, it was apparent to the researchers that the statements fell into one of two categories – types of knowledge garnered from an international experience and specific concrete experiences that individuals should undergo to acquire the aforementioned knowledge. Therefore, for a more useful final product, the Likert statements were simplified and redesigned into specific components that seemed to fall into two categories – concrete experiences and knowledge. While each category is slightly different operationally, there is a significant amount of overlap between categories and components – which you can observe in Table 2.
### Table 2

**Final Components Salient within an International Leadership Experience**

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Concrete Experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respect for other cultures</td>
<td>Provide multicultural experiences that focus on local values and beliefs</td>
</tr>
<tr>
<td>How to effectively interact within a global society</td>
<td>Encourage interaction with local students/peers</td>
</tr>
<tr>
<td>Think critically about leadership models they embrace</td>
<td>Encourage frequent debriefing, personal logging and self-reflection throughout the experience</td>
</tr>
<tr>
<td>Recognize how historical, political, social, economic, cultural contexts are interconnected</td>
<td>Do extensive “pre-work” on study country and leadership</td>
</tr>
<tr>
<td>Local indigenous people to the area</td>
<td>Include three learning stages within the experience: pre-work (background), the experience, post-work (reflection)</td>
</tr>
<tr>
<td>Effective communication styles within the local culture through immersion in the local social system</td>
<td>Include a breadth of experiences illustrating what is working within society (i.e. public health) and what is not (i.e. poverty, environmental degradation)</td>
</tr>
<tr>
<td>The connection between culture, leadership and ethics within the county of interest</td>
<td>Build in extensive self-reflection using personal logs as part of a “post-work” experience</td>
</tr>
<tr>
<td>The differences and nuances of international work environments, and how to effectively work in these situations</td>
<td>Encourage students to ask themselves “Who am I as a leader and what am I becoming?”</td>
</tr>
<tr>
<td>How to share appropriate information in international settings</td>
<td>Plan clear learning goals</td>
</tr>
<tr>
<td>A world vision of information, including the nature/scope of global problems</td>
<td>Attend a cultural event – to encourage knowledge development of the large social system</td>
</tr>
<tr>
<td></td>
<td>Encourage students to use the experience as a learning opportunity</td>
</tr>
<tr>
<td></td>
<td>Assist students in developing networks with local individuals at educational institutions, industries and organizations</td>
</tr>
<tr>
<td></td>
<td>Provide experiences to assist in developing global communication skills</td>
</tr>
<tr>
<td></td>
<td>Longevity - Plan for the experience to be long enough for cultural immersion</td>
</tr>
<tr>
<td></td>
<td>Promote journaling throughout the experience – for self-reflection and thoughts about impact</td>
</tr>
<tr>
<td></td>
<td>Provide opportunities for students to apply leadership theories and practice within the country</td>
</tr>
<tr>
<td></td>
<td>Plan for opportunities for students to meet local leaders and talk about their leadership experiences</td>
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Discussion & Conclusions

It has been said that participation in a leadership-focused international experience is a highly effective way to learn about leadership (Earnest, 2003). As society becomes more competitive in a global sense, it is our responsibility as educators to provide work-ready graduates; to do this, it is essential to include both contextual knowledge and leadership development, but there also needs to be a measure of global awareness worked into the curriculum. Without this final piece, we are putting our students at a disadvantage in a highly competitive, globally charged world.

The panel used for this Delphi study included experts from a wide variety of sources – academic, international programs, industry, non-profit organizations – in order to get at the gamut of knowledge and experiences that should be included within an international leadership experience. There were many standard answers, along with many new, innovative ways to think about leadership education. Perhaps one of the most intriguing components that ended up being considered a high priority by the panel was to encourage students to think critically about the assumptions of the leadership models they embrace; unwittingly incorporating critical thinking into the actual art of leadership development. One of the most powerful aspects of the international experience may be battling with the paradigm shifts that students will inevitably face as they immerse themselves in another culture. At the same time, without being subjected to experiences such as this, students may find themselves at a disadvantage, with some even believing that how things operate in the United States is typical for cultures across the world.

The final components recommended to be part of an international leadership experience were broken into two different categories – knowledge to be learned through the experience, and concrete experiences that should be introduced as part of the structure of the overall international experience. Beginning with the overall knowledge that should be gained through the overall experience, several themes emerged. Culture was found to be important in several knowledge aspects – from developing a respect for other cultures (including local indigenous people), to recognizing how cultural contexts interconnect with many other (political, historical, economic, etc.) areas, to establishing how culture, leadership and ethics work with each other within the county of interest. It really shouldn’t be surprising an important aspect of an international leadership experience involves the need for some strong cultural knowledge. Part of the reason for going and immersing oneself in another country is to experience things one cannot receive in a classroom – and while much of this knowledge can be started with an introduction in the classroom, it certainly is taken to another level with travel and tangible experiences within the county of interest.

A second theme running through the knowledge components was the need to develop a fundamental knowledge of how communication and information work within another culture. The panel agreed that it is important for students to learn about effective communication styles by immersing themselves in the local social system, as well as learning how to share appropriate information in international settings, and perhaps most importantly develop a world vision of information, including the scope of global problems. Students of today will be the leaders of tomorrow. It is especially important for tomorrow’s leaders to grasp the scope and interconnectedness of many of today’s global problems – for these will continue to become more interconnected and complex as time goes on. Ultimately, it will be today’s leaders-in-training, that will provide the solutions for tomorrow.
A final component that was found important by the panel was a working knowledge of the international work environments, and how to effectively work in these situations. As society becomes more and more globally based, today’s job interface more and more with individuals from different countries. Still, many of these countries maintain their own values and preferences, their own traditions and cultures. This makes interacting with business men and women of other cultures more complicated; the best solution to this issue to a working knowledge that other cultures operate differently than our own, and to be aware of potential differences. Even though being immersed in one international culture won’t necessarily help with the knowledge of another international work environment, at least students can develop an awareness of potential differences and keep this in mind for future interactions with other cultures.

The other category components fit into was that of concrete experiences. An international leadership experience should be structured in such a way that students can garner the knowledge that the instructor deems important; within the confines of this study, it would be the knowledge aspects we just discussed. However, without appropriate structures in place, an international leadership experience turns merely into a glorified sight-seeing tour. So it is particularly important that students are empowered to learn through different concrete experiences that are already built into the international experience.

As with the knowledge category, there were several themes running throughout the concrete experiences category. Fortunately, many of these themes ran parallel to the themes in the knowledge category. This is appropriate, for it is the concrete experiences that put meaning behind the knowledge developed throughout the overall experience. Culture again was an important theme throughout the concrete experience category; aspects such as providing multicultural experiences that focus on values and beliefs, attending a cultural event to learn more about the social system, and having a breadth of experiences on what is working in local society and what is not are all aspects that were deemed important within the concrete experiences category.

Some of the concrete experiences were much more operational in nature. These focused specifically on how the international leadership experience should be structured. Encourage interaction with local students, include frequent debriefing, personal logging and self-reflection, and incorporating three learning stages into the experience (including pre-work and post-work stages) were all considered very important for a successful learning experience. All of these concrete experiences should be associated with clear learning goals. With clear goals and objectives, it will be much more straightforward to grade and determine the amount of knowledge acquired through the overall experience. As a final point, longevity within the culture was determined to be important for a successful international leadership experience. While there wasn’t a specific amount of time suggested, obviously the more time that can be allocated for an experience such as this, the better. Because travel within embedded international experiences is generally done during or at the end of the semester, timelines are often limited to between 7 and 21 days.

The final theme that makes this study particularly useful for leadership educators is the focus within the context of leadership. The panel felt that what makes an international leadership experiences different from a general international experience is the focus on various aspects of leadership. One important component was for students to be encouraged to reflect upon the experience and ask themselves “Who am I as a leader and what am I becoming?” that would impress upon students to use the
overall experience as a learning opportunity. Other important leadership experiences included opportunities to network with local individuals, occasions to apply leadership theories and practice within the county, and chances for students to meet with and talk to local leaders. Each of these concrete experiences allows for students to experience leadership within the context of another culture or country; this encourages leadership skill and knowledge development, as well as allowing students to apply these skills within a more global framework.

**Recommendations & Implications**

In general, this study carries implications for educators in agricultural as well as Extension education. While contextual knowledge may differ across these fields, there are leadership development opportunities, students and educators to be found within both fields. Even more broadly, all of us are affected by those in leadership positions; because the students of today will be tomorrow’s leaders, we have a direct interest in their leadership development.

Potentially the most important implication of this study links back directly to the three levels of understanding mentioned within the conceptual framework. International leadership experiences are only as effective as the curriculum is in which they are featured. Effective curriculum development depends, in part, on the audience of interest. So while the international components highlighted within this study are important for students within the world marketplace, participants within nationally focused leadership programs, and local community leaders alike, it is salient to note that the components are only part of the holistic picture. The knowledge and concrete experiences mentioned within the study are only a place to start; each specific international leadership experience must be tailored to the participation group. Aspects such as course purpose and objectives, application to personal examples, interaction among students and instructor (as well as the environment) and final projects are all examples of important design factors to be considered when developing a truly effective course or experience. It is these important details that make the difference between a mediocre leadership experience, and one that is life-changing.

The implications begin for students in a much more general sense. Developing a more global knowledge of leadership and world issues through well-planned and effective international leadership experiences is important for traditional students, non-traditional students or Extension agents. These experiences can be done in a variety of ways; however, it must be noted that the primary reason for the study was to provide an outline of salient components of an international leadership experience – therefore, as many of these components should be included as possible when planning the overall experience.

An implication more explicit to this specific study is the integration of the factors into a leadership course, to be offered at the University of Kentucky, focusing on leadership perspectives around the world. This course would include an embedded international leadership experience, and the aforementioned components would be directly incorporated into planning for this experience. Beyond UK, the intent behind this Delphi is to provide an outline for those educators wanting to plan an international experience that includes both leadership and global knowledge. What’s more, many of the components are good, fundamental factors that can be applied to any class or international experience with similar objectives.

Looking at the broader picture, other implications include the potential to broaden current student leadership development to include international aspects, the ability to support and assist students in developing international networks that they can take
into their professional careers, and ideally, to encourage the development of more global thinking by many of tomorrow leaders.

It should be noted that while valuable (particularly for those looking for help designing international curricula or experiences), the scope of this study is somewhat limited. Nonetheless, there is still enormous potential for future research on the topics of international curricula and leadership development. Studying participants of international leadership experiences, taking this Delphi one step further and asking international study coordinators for their consensus, and looking at specific leadership skills enhanced through global interactions are just a few of the ideas that come from this study. As an Extension specialist, I see many of these aspects being easily incorporated into trainings and in-services developing leadership and global knowledge in Extension agents and their constituents. With useful and accurate research supporting the need for global leadership knowledge, we are provided with the foundation needed to for funding from a wide variety of sources – from grant possibilities to state and national governments.

References


Improving Agricultural Extension Human Resource Capacity in a Decentralized Policy Context: A Ghanaian Case Study

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Abstract
Agricultural extension provision in many developing countries is affected by the quality of the extension staff. To understand the factors that can improve the capacity of extension staff in a decentralized extension context, a single-case study of a successful district level public extension organization in Ghana was studied. To improve the capacity of extension staff, the case study emphasized the importance of combining formal needs-based training and an organizational learning culture. The study suggests that traditional training in technical areas and extension methods is not sufficient in this context. With the shift from a top-down to bottom-up management approach, managerial staff need a new training in participatory management and administration. With a cross-sector pluralistic system, they also need training about the mechanisms that will facilitate coordination, collaboration and lobbying within the extension system. Also, with a broader focus and roles of district extension, the field staff would need a broader knowledge base of technical expertise that takes into consideration indigenous knowledge of farmers, and attitudes of searching for knowledge that they do not have, or for seeking out others to provide the necessary knowledge. The study highlighted the importance of fostering an open environment where extension staff feel comfortable to meet, interact, share information and ideas, and motivated to work.

Key Words: Agricultural Extension, Decentralization, Human Resource Development, Training, Staff Motivation, Organizational Learning
Introduction

Human resource capacity is identified as critical for ensuring the success of extension decentralization reforms in developing countries (Smith, 1997; World Bank, 2000) and there is reasonable agreement that current capacity in this area in developing countries is lacking (United Nations, 2005; Vijayaragavan & Singh, 1997; Zinnah et al., 1998). It is believed that in most developing countries extension services suffer from lack of professional competency and motivation to carry out the decentralized responsibilities, due to poorly defined human resource development and management systems (United Nations, 2005; Vijayaragavan & Singh, 1997; Zinnah et al., 1998).

Ghana’s public extension system has adopted the decentralization policy since 1997. Although this policy is believed to be critical to current challenges facing Ghana, recent literature (MoFA, 2002; MoFA, 2003) has suggested that the Ghanaian extension service is having difficulties implementing it. One of the reasons for this has been the lack of human resource capacity (MoFA, 2002; World Bank, 2000). Interestingly, the prescriptive literature (Cristóvão et al., 1997; Oakley & Garforth, 1985) describes the general factors (training and staff motivation) that are critical to extension human resource capacity building, but little - if any - empirical work has been conducted on improving the capacity of extension human resource in a decentralized extension policy environment.

Anecdotal evidence suggests that some district extension organizations in Ghana are performing better than others in the decentralized extension environment. Therefore, if a successful district extension organization could be identified and studied, it would then be possible to identify and understand key factors that can improve the capacity of extension staff to achieve success in the new policy context.

Purpose

Given the background provided in the above section, the purpose of this research, was to use a case study to provide an understanding of the factors that contribute to improve the capacity of extension human resource in a decentralized policy context. The anticipation is that lessons from this case study can inform other decentralized extension organizations that wish to improve their human resource capacity for better extension provision.

Methods

A single-case study method was adopted for the research. This was found suitable for an in-depth study of a complex organizational function. This paper is part of a three-year (2004-2007) scholarly research that investigated factors that determine the success of a district level extension organization in Ghana (Okorley, 2007). To select a case for this study, the determining criteria were that it was seen as: successful in terms of increased stakeholder participation and enhanced contribution to farmer household livelihood security; having staff that could articulate why the organization was successful; having the majority of the staff - particularly senior staff - who had worked for the organization from the date when the organization was decentralized; and having good archival records of its extension activities. The Ministry of Food and Agriculture staff were asked to use these criteria to rank the four most successful district extension organizations within the Central Region that comprised some 13 district extension organizations. Based on a preliminary investigation on their suitability for the study, the Assin District Agricultural Development Unit was selected because it was the most successful and accessible and the staff were receptive.

Multiple sources of data collection were used – interviews (primary source),
documents and observations as means of triangulation. Participants for the study were selected from a broad area – within the case organization and outside - using a stratified sampling technique. The aim in the stratification process was to obtain information from both key informants at different levels of the organization and different stakeholders that are involved in the activities of the organization. In all, a total of 32 key informants were used in the study. The data collected were coded and summarized to provide a logical explanation. The computer program NVivo was used to facilitate the qualitative data analysis process. To ensure a high quality case study, several strategies including data triangulation, establishment of chain of evidence and explanation-building analytic strategy were used to ensure the overall quality of the research.

The Context of the Case Study

To discuss the results of this case study, it is important to set the scene by defining the context of the organization under study. This will help us get a better appreciation of the findings. The economy of Ghana depends largely on agriculture. The agricultural sector contributes about 35% of Ghana’s GDP and employs about 60% of its labor force. From the 1970s until now there have been efforts by the Ghanaian government to reform its agricultural extension system. After several unsatisfactory policy attempts, decentralization reforms were introduced in 1997 with the hope that it will encourage grassroots participation of local people, cross-sector extension pluralism and stakeholder collaboration.

The organization under study is part of Ghana’s public extension system at a district level. As part of the reforms, the organization has adopted a decentralized extension approach with an expanded livelihood security focus, and as such, has taken on multiple roles to increase food security, reduce poverty and improve the livelihoods of farmers in the district. With extension decentralization, managerial responsibility is delegated to the district level and the district extension managers are expected to provide leadership for initiating, planning and implementing agricultural extension programs. Similarly, the field staff are now expected to operate in a more holistic way and actively involve farmers and other stakeholders.

The case organization has highly qualified, mature (mostly 30-45 years old), and experienced management and field staff (Okorley, 2007). It has limited physical infrastructure, and funding from government is inadequate and uncertain in most instances. Interestingly, the organization must service a large number of farmers over a large geographical area where the road network is poor. The organization has estimated that there are 123,375 farmers in the Assin District, so each agricultural extension agent (AEA), a field staff is expected to provide extension services to over 5,000 farmers (1AEA: 5,364 farmers) far above the national estimated figure of 1,500 (i.e. 1:1,500). The farmers in the district are generally poor, illiterate, and farm small plots (≤ 4.0 ha), and practice mainly subsistence agriculture that is crop-based. The above circumstances form the context within which the results of this case study are discussed and interpreted.

Findings

The findings provide an in-depth understanding of human resource capacity building as a key factor of success for decentralized public agricultural extension in Ghana as highlighted by Okorley, Gray and Reid (2009). The results demonstrate that the organization under study is an example of an extension organization which is improving its success by strengthening the capacity of its staff through: 1. the provision of needs-based training, 2. fostering workplace informal learning, and 3. ensuring staff motivation and commitments.
These three key strategies are discussed in the following sections.

_Needs-based training_

Prior to 1997, the training programs undertaken by the staff of the organization under study in the district were developed at the regional or national headquarters with little or no consultation with staff at the district level. Thus, these training programs often failed to take into account the needs of the staff in the district. An important reason for the success of the case organization in the district has been that the district management team is now responsible for organizing the training of its own staff. A key characteristic of its training program is that it is “needs-based”. In other words, each year, the organization allows the managerial and field staff to identify the specific skills and knowledge they require to work effectively for the next twelve months given its organizational goals and current capabilities. This supports reports by Adhikarya (1996) and Pasteur (2002a) which indicated that extension training is more useful to staff when it is based on the needs of the staff, and these have been determined by the staff themselves. Stone and Coppernoll (2004) also argued that the training of extension personnel should be related to the development of staff to meet the organization’s goals. This needs-based training is used by the case organization to improve staff motivation and performance. This is consistent with Pasteur’s (2002b) findings in Bangladesh where he found that staff training (in general) can improve the staff members’ confidence, reflection, stimulation of new ideas and performance.

The case organization provides in-service training to its staff in-house or they are sent on study leave. The organization relies on in-house expertise (supervisors, the subject matter specialists) for training its field staff. However, where it does not have the in-house expertise, it brings in experts from the regional office of the Ministry of Food and Agriculture (MoFA), and other institutions such as NGOs, research institutes, universities and other government organizations to facilitate the training. The organization operates in the Assin District, which is close to Cape Coast (75 km) and Kumasi (180 km) where there are agricultural research and educational institutions (Crop Research Institute, Kwame Nkrumah University of Science and Technology and University of Cape Coast). This proximity to major research institutions provides it with an advantage in relation to accessing expertise for training. An important aspect of the organization’s needs-based training program is that it uses self-evaluation by its staff members to identify training needs, once the district extension plan has been developed and staff know what activities they will be undertaking over the next twelve months. Field staff then negotiate their training requirements through discussion with their supervisors. This procedure is similar to the competency-based training needs assessment process proposed by Stone and Coppernoll (2004).

Lack of managerial capacity of extension staff has been identified as a major limitation to decentralization reforms in developing countries (Cristóvão et al., 1997; Garforth, 2004; Swanson & Samy, 2004; United Nations, 2005; Vijayaragavan & Singh, 1997; Zinnah et al., 1998) and particularly, in Ghana (Amezah & Hesse, 2002; MoFA, 2002; MoFA, 2003). Once the training needs of the supervisors and the Director are identified, the organization sends them to the office of the national Human Resource Management Directorate (HRMD) of MoFA. The HRMD develops and arranges a number of specialist training programs at the national level each year for these senior extension staff from the districts. In addition to the technical staff, the organization also provides six-monthly in-service refresher training for the support staff in office management skills. The organization believes this is critical - especially when it comes to information...
management and correspondence with stakeholders within the district extension and rural development system.

A point highlighted in this study that has not been mentioned in the literature is that the case organization schedules its in-house needs-based training program so that the training occurs shortly before the field staff plan to apply the training in the field. The case organization has identified that because field staff need a much greater knowledge base given their broader livelihood security focus, they have trouble retaining such information over a long period of time. Therefore the scheduling of the training has become an important tool for improving the effectiveness of field work in new areas.

A critical feature of field staff training at the case organization is the involvement of farmers in the training process, a practice they call “joint-training” exercises. This is undertaken to improve the field staff’s knowledge of farmer practices and the reasons behind these practices. The organization believes that by understanding farmers’ practices and indigenous knowledge, it can better meet their needs because it can build on what they already know – a demonstration of major attitudinal change towards farmers’ indigenous knowledge. This explains the expressions given by some key informants:

we have seen that most indigenous technologies are improved technologies. But in those days (before 1997) we did not know that farmers had much to offer. So now there is the idea of getting information from the farmers to improve on it or adopt it. (District Director of Agriculture, personal communication, May 21, 2004 para. 442).

The above finding supports the views in the literature (Smith, 1997; Swanson & Samy, 2004; van den Ban & Hawkins, 1996) that extension staff require both new competencies and change in attitudes to be able to operate effectively in the new decentralized policy environment. Vijayaragavan and Singh (1997) advocated that field staff could benefit from understanding the indigenous knowledge of local farmers. Subject matter specialists (SMSs) are also involved in these training sessions and they encourage the field staff to identify the principles behind the farmers’ practices to foster further learning. The role of the SMSs is to help the field staff understand the practices of farmers and the principles that underlie the farmers’ actions. This three-way (farmer – field staff - supervisor) interaction also helps improve both the farmers’ and the SMSs’ knowledge. The farmers gain an understanding of the scientific principles behind what they do and the supervisors obtain a better understanding of the practices of farmers in the district. The farmers can take this scientific knowledge back to their farming community and the supervisors can use this knowledge when training other field staff in the district. The importance of indigenous knowledge has been highlighted in the literature (Adhikarya, 1996; van Beek & Coutts, 1992; Vijayaragavan & Singh; 1997), but its acquisition by the extension organization has been discussed in relation to extension program planning and implementation rather than through joint-training.

The study revealed that because the organization under study has taken a broader approach to extension, the field staff need a broader base of technical knowledge.
Similarly, because they are playing multiple roles, working in collaboration and trying to improve farmer participation, the staff of the organization need different skills from those they required under the previous extension approach. To improve the technical capacity of its staff, the case organization provides the staff with knowledge and skills in a broad range of areas. For example, in 2003, the staff required training in: extension (computer systems, adult learning, extension communication); agricultural production (e.g. agricultural pest management, soil and water conservation techniques, inland fish farming and livestock nutrition and housing); other areas related to farm household livelihood security (e.g. HIV/AIDS control and child nutrition); group and business management techniques (e.g. small group and cooperatives management techniques and marketing); and agro-processing. These areas of training are similar to those proposed in the extension literature (Garforth, 2004; Sulaiman, 2003; Swanson & Samy, 2004; Tossou & Zinnah, 2005) as key competencies required of extension providers in general. Garforth, 2004 summarized them as technical knowledge and communication and facilitation skills. To conclude this section it can be said that a key factor in the case organization’s operation that has contributed to its success has been its commitment to improve the capacity of its managerial and technical staff.

Informal learning culture

Given the changing situation in agriculture and the increasing acceptance that farmers’ needs are complex and should be approached from a holistic perspective, it is now acknowledged that continuous learning by extension organizations is needed for them to remain effective (Leeuwis & van den Ban, 2004; Pasteur, 2001; Sulaiman & Hall, 2004). The case organization is an example of a district level public extension organization that has recognised that formal training is only one means by which its staff can learn on a continuous basis. The organization has taken steps to create a work environment that fosters learning through other, less formal, mechanisms to augment its staff’s need for a broader knowledge base. This practice has been advocated by several other authors (Leeuwis & van den Ban, 2004; Pasteur, 2001; Sulaiman & Hall, 2004) including Carney (1998) who stated that apart from providing extension staff training in new skills, it is equally important to improve the working environment to encourage learning among its staff.

To foster this learning culture, the case organization provides a range of mechanisms through which staff can learn informally. First, it fosters an open environment in which staff feel comfortable in sharing information. Second, it provides a forum whereby the staff can meet, interact, share and reflect upon their knowledge. Third, it provides learning materials that the staff can access for self-directed learning. Finally, it organizes a range of forums where its staff can meet with staff from other organizations to learn about particular issues (e.g. AIDS/HIV and Root and Tuber Crops Improvement) from a range of perspectives. Although the importance of these four factors to organizational learning has been highlighted in the organizational literature (Argyris & Schon, 1996; Johnston & Hawke, 2002; Senge, 1990), few authors (Leeuwis & van den Ban, 2004; Pasteur, 2002b) have mentioned them in the extension literature. The range of mechanisms through which the staff of the case organization learn informally is discussed in the following paragraphs.

The case organization uses three mechanisms to create an open environment in which staff feel comfortable in sharing information. These are: (1) it provides support and involves the field staff in decision-making; (2) it encourages teamwork among the staff; and (3) it ensures that the staff are informed in a timely fashion about policies and other relevant
issues that affect them. The aim of undertaking these measures is to improve contact rate, trust and respect among the staff, conditions critical for promoting information sharing and learning in the organization, a view shared by Leeuwis and van den Ban (2004). The organizational studies literature (Argyris & Schon, 1996; Johnston & Hawke, 2002; Senge, 1990) which provided the basis for organizational learning discourse in extension also highlights the importance of participatory decision-making, teamwork and the provision of feedback to staff in promoting learning in the organization. Although also mentioned by some authors in extension (Leeuwis & van den Ban, 2004; Pasteur, 2002b), few details were provided about how this informal learning can be fostered. However, the importance of teamwork as a key factor in enhancing learning and work performance is highlighted by both Pasteur (2002b) and Leeuwis and van den Ban (2004). Also, Leeuwis and van den Ban have stressed the need for extension organizations to develop systems that ensure that extension workers benefit from other workers’ experiences.

To foster informal learning, the case organization holds monthly staff meetings to provide fora for staff to interact, share and reflect upon their knowledge. All staff attend these meetings and the field staff describe their activities relative to their monthly mini-plans. Field staff are encouraged to highlight problems, opportunities, new initiatives and other information they want to discuss during the meeting. Such discussions may focus on technical information or extension methods. The management of the case organization also uses these monthly meetings to provide the staff with information about policies and other relevant issues of interest to them. This supports the views of Pasteur (2002a) and Stone and Coppernoll (2004) that face-to-face reporting provides extension staff with learning opportunities through questions, answers and ideas from peers. Similarly, the findings highlight the importance of frequent meetings for extension personnel and providing and sharing information with them, all of which motivate them to learn from their experiences, a view also shared by Leeuwis and van den Ban (2004). Also in agreement, Leeuwis and van den Ban (2004) argued that the promotion of interaction and information sharing among extension field staff provides the opportunity for the staff to learn by comparing the amount and quality of their work with those of their peers.

With this broader extension approach (livelihood focused), the staff need access to a broader range of learning materials. The case organization provides its staff with learning material for self-directed learning which includes an electronic-database, books, and training modules. Stone and Coppernoll (2004) and Adhikarya (1996) have also advocated the use of printed materials, the internet, and video and audio self-directed media to promote workplace learning. Moreover, the practices of the case organization are consistent with the recent literature in extension (Leeuwis & van den Ban, 2004; Richardson, 2003; Swanson & Samy, 2004) which prescribes the need for the adoption of computer systems in extension organizations because they are critical for improving the capacity of extension staff to access (e.g. from the internet) and process important information for their work.

The case organization uses workshops and other forums with farmers and other stakeholders to promote informal learning in the organization. The forums provide the extension staff with the opportunity to interact, share ideas and learn from farmers and staff in other organizations. Although little is written in the extension literature on this topic, Leeuwis and van den Ban (2004) highlighted the importance of stakeholder contact and interaction in providing extension staff with the opportunity to gain new experiences and ideas. Moreover, the findings support the view in the
management literature (Johnston & Hawke, 2002; Senge, 1990) that networks and organizational collaboration improve learning in organizations.

The organization fosters a more transparent and open management system where all staff, to some extent, can contribute to management decisions. It also encourages more contact and open communication to build respect and trust among the staff, giving a level of flexibility to field staff to design their location-specific extension activities with farmers, encourages team work amongst the staff, and has opened itself up to increased scrutiny and input from farmers and other stakeholders through greater interaction with them. Finally, the organization encourages the use of learning materials (computer systems and print materials) to facilitate information management and self-directed learning. Given these characteristics, the case organization can be viewed as an extension organization that is moving towards becoming what the organizational studies literature (Argyris & Schon, 1996; Johnston & Hawke, 2002; Senge, 1990) describes as a ‘learning organization’. Interestingly, this is not explicitly stated by management, but what is apparent is that the organization is seeking to become more responsive to farmers’ needs, finding new ways to deliver relevant services efficiently to as many farmers as possible and working to improve the competence of its staff to meet the challenges they face in their job to enhance the contribution of agriculture to the livelihood security of farm households. Although fostering informal learning is important for improving the capacity of staff, motivation and commitment to work are equally important. In the following section the methods the case organization uses to encourage staff motivation and commitment are discussed.

**Staff motivation and commitment**

Given its limited resources, low extension agent to farmer ratio and the wide geographical area that extension staff must cover in the district, this case is an example of a district level extension organization that has adopted some realistic measures to improve the level of staff motivation and commitment. The case organization uses three mechanisms to ensure staff motivation and commitment in the organization. First, it has adopted a more inclusive approach to management. Second, it rewards high performance among its staff. Finally, it fosters good staff relationships within the organization. These findings are in line with Herzberg’s (1996) view that motivation is influenced by a favorable work environment that provides challenging tasks and opportunities for individual achievement, recognition, responsibility, advancement and personal growth.

Prior to decentralization, the management of the case organization was top-down - the district extension Director received and followed instructions from the regional and national offices with limited involvement of subordinate staff. With the inclusive approach to management, all field staff are involved in the development of the case organization’s annual extension plan and each staff member is responsible, in consultation with his supervisor, for the development of his own annual work plan and training program. Two field staff representatives are also included in a management team comprising the director and assistant, the supervisors and a support staff representative. This team is responsible for the tactical and operational decisions made by the case organization throughout the year. This allows much greater transparency of decision making because the field staff representatives are involved in the actual decision making and can report these decisions to their fellow staff members. As such, the field staff have a much greater involvement in the decisions related to their work and training throughout the year. Consistently with the literature (Hivner et al., 2003; Mwangi & McCaslin, 1995), the case organization believes that this level of
involvement gives staff a level of ownership, and this enhances their commitment and motivation.

The case organization uses incentives to motivate staff and these incentives are provided in the form of tangible (monetary value associated with them) and intangible (no monetary value associated with them) rewards in line with the view of Leeuwis and van den Ban (2004). The organization presents awards to best performing extension staff at the end of each year. There are awards for specific projects and for the best all-round field staff member. Tangible rewards that staff of the case organization had received in the previous year included cash, field gear (e.g. gumboots, raincoat), and household equipment (e.g. tape recorders and television sets). The intangible rewards included a certificate of recognition and praise at an award-giving ceremony. Several authors (Leeuwis & van den Ban, 2004; Mwangi & McCaslin, 1995; van den Ban & Hawkins, 1996; Vijayaragavan & Singh, 1997) have also stressed the importance of tangible (e.g. financial incentives) and intangible rewards (e.g. praise, recognition) in relation to staff motivation in extension organizations.

The case organization views promotion as an important factor in motivating staff. Lack of staff promotion has been reported by Mwangi and McCaslin (1995) and Vijayaragavan and Singh (1997) as a cause of low staff motivation in extension services in developing countries. Promotion results in better remuneration for staff in the case organization and it also opens up further opportunities for professional development through scholarships and further education. This supports Stone and Coppernoll’s (2004) view regarding the importance of professional development in staff motivation. In the public extension system in Ghana, the decision to promote staff is taken at the national level, as such, the case organization has recognized the importance of timely promotion to staff motivation, a point supported by Stone and Coppernoll (2004) and Leeuwis and van den Ban (2004). The organization has therefore developed an administrative system to ensure accurate staff records are maintained and the promotion of staff is sought promptly when it is due. Such a system was also recommended by Stone and Coppernoll.

The final means by which the case organization motivates staff is by fostering good staff relations and creating an atmosphere of trust and mutual respect. The importance of good staff relations to motivation has long been recognized (Herzberg, 1996). To foster an environment of trust and mutual respect, the organization fosters frequent staff interactions and the sharing of information. It also encourages transparency of decision making by involving staff in the decision-making process. As previously discussed, the staff meet with their supervisors in the field bi-weekly, and also monthly at the district office for general staff meetings. The director encourages field staff to speak their minds and he ensures that they are kept abreast of policy and resourcing issues that are likely to impact on the organization. Field staff are involved in program planning, are given responsibility for developing their own work plans and training programs and have representatives on the management team. This is consistent with Herzberg’s (1996) view of motivation which highlighted the importance of trustworthy senior management staff (e.g. supervisors,) valuing inputs from junior staff and providing them with work related support. It is interesting that there is little information in the extension literature that has highlighted the critical role of fostering good staff relationships based on openness, trust and mutual respect in staff motivation and commitment.

Conclusions and Implications

The study highlights the importance of the managerial and technical capacities of staff in ensuring the successful operation of
a decentralized extension organization. To improve staff capacity, the study highlighted the critical role of training, an informal learning culture and staff motivation. In relation to staff training, the importance of needs-based (competency-based) training and the role of farmers’ indigenous knowledge in training of field staff were highlighted. The study implies that where extension staff are expected to play multiple roles, there would be the need to provide a wide range of competencies to narrow the gap between the staffs’ knowledge and extension skills vis-à-vis the roles they are expected to play at the local level. These competencies should include extension and facilitation skills, technical knowledge and skills in agricultural production, other off/non-farm issues (e.g. health and marketing) that have direct impacts on agriculture and livelihood security, and public administration and management skills for the senior management staff.

The case study demonstrated that learning organization principles are critical for improving human resource capacity of extension organizations, a point that has been prescribed by some authors (Leeuwis and van den Ban, 2004). These principles include fostering an open environment in which staff feel comfortable sharing information, the provision of regular and frequent in-house fora whereby the staff can meet, interact, share and reflect upon their knowledge, and other fora where staff can meet with staff from other organizations to share ideas. The study, however, revealed that an extension organization may not necessarily have to set out to become a learning organization, but as it focuses on seeking ways to ensure continuous improvement in its operations, it will naturally develop the characteristics of a learning organization.

The study demonstrated that where an extension organization does not have the power to control staff remuneration, recruitment and promotion - a problem faced by many district extension organizations in developing countries - it would have to use a range of other mechanisms to ensure that it has motivated and committed staff. It can use a more inclusive approach to management that values staff input in management decision making, provides rewards for high staff performance, and fosters good staff relationships based on mutual trust and respect within the organization.

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The Market-link Imperative: Refocusing Public Sector Extension

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Abstract

This paper reviews and compares two market-driven strategies: contract farming and producer marketing cooperatives. In passing, the paper critiques the single-minded contract-farming emphasis adopted by the New Partnership for African Development and its Comprehensive Africa Agriculture Development Program (NEPAD-CAADP). Pursuing ideas put forward by Burt Swanson, the International Food Policy Research Institute and the World Bank, the paper concludes with recommendations for reorganizing extension systems in less developed countries.

Keywords: Agricultural extension, contract farming, producer cooperatives, institutional innovation, training.
**Introduction**

Public sector agricultural extension is at a defining moment. This involves a gradual shift toward decentralized, participatory, market-driven extension reform. Structural, financial and managerial extension reforms put forward since the 1990s have significantly altered extension system development worldwide. Increasingly emphasized is the importance of extension’s continuing role in marketing and the importance of developing market-oriented extension (e.g., Bahn and Jennings, 1990; Narayanan, 1991). Also at that time the World Bank via its Training and Visit (management) system sought to move extension toward a demand rather than a supply system of extension education and knowledge exchange. There was a gradual shift toward privatization, decentralized, participatory and market-driven extension reform. Swanson (2007) on missions for the World Bank helped to reorganize the national extension system in China (Swanson, 2007 and 2008, personal communication). Later, the World Bank at its international conference on Extension Reform for Rural Development (2002) and through the cases collected in its resultant five-volume follow-up to the conference (World Bank, 2004) highlighted the many successes in extension reform. Still, the concept and practice of market-driven extension is only beginning to take hold in the national extension systems of less developed countries.

**Purpose and Objectives**

The present paper draws on (a) Swanson’s seminal article on “The changing role of agricultural extension in a global economy” which appeared in the *Journal of International Agricultural Education and Extension* (2006a), (b) the conclusions of the International Food Policy Research Institute (IFPRI) that there are two key market-driven strategies open to smallholder producers, i.e. contract farming and marketing cooperatives, and (c) the World Bank’s *World Development Report 2008: Agriculture for Development* and its support for contract farming, producer organization and cooperation between these private orientations.

Organized into three main sections, the paper begins with the rationale for overhauling the purposes of public sector agricultural extension systems in the less developed countries. Two market-driven strategies, contract farming and producer marketing cooperatives are compared with regard to their implications for smallholder farmers. The New Partnership for African Development and its Comprehensive Africa Agriculture Development Program (NEPAD-CAADP) are critiqued for their single-minded stress on contract-farming without commensurate emphasis on cooperatives development. The final section considers the role of extension in developing and supporting market linkages for smallholder farmers.

To clarify the use of terms in the paper, cooperatives are distinguished from the more inclusive array of producer organizations. The paper concentrates on the two key market-drive strategies already mentioned, cooperatives and contract farming. Hence, the paper does not include discussion of all market-driven strategies nor the instances in which contract farming or cooperatives may be the only viable option or common model. The focus is on the two above-mentioned key market-driven strategies, first with respect to the ‘business’ of the public sector (Rivera, 2008a) but more importantly to highlight the importance of what the author considers the need for balance of powers between these two distinct private sector entities.

**Rationale for Extension Reform**

The World Development Report (WDR2008) on *Agriculture for Development* puts forward four policy objectives: (a) improve market access and
establish efficient value chains; (b) enhance smallholder competitiveness, and facilitate market entry; (c) improve livelihoods in subsistence agriculture and low-skill rural occupations; and (d) increase employment in agriculture and the rural non-farm economy and enhance skills (Overview, p. 19).

Greater commercialization of agricultural systems and increasing trade liberalization dictate the need for different and better capacity on the part of the agriculture workforce in the 21st century. Global changes in the roles of the public and private sectors and the dramatic advancements in technology have also strongly impacted agricultural workforce development needs, especially with regard to extension development. The global reality and the increasing call for market-directed strategies to enhance smallholder farm income are central to current priority concerns about extension’s role and suggest the need for its overhaul (Rivera & Alex, 2008).

**Imperatives and Strategies**

Two imperatives are central to public sector agricultural extension’s development in the future. Neither is entirely new; what is new is their urgency and degree of priority for extension. They are (a) the knowledge imperative, which is associated with globalization and efforts to promote national innovation systems (World Bank, 2006), and (b) the market-link imperative, which calls for changing the focus and role of extension from food security to increasing farm income and rural employment (Swanson, 2006a).

Also, two key market-driven strategies exist for opening the pathway to smallholder farmers who seek to become involved in high-value agricultural production, according to the International Food Policy Research Institute (IFPRI) research contributors Delgado, et al. (2001, p. 2) and the IFPRI Director General, von Braun (2004, p. 14). These two strategies comprise contract-farming schemes and producer marketing cooperatives.

While this paper concentrates on two key market-driven strategies, other market linkages already mentioned (FAO, 2008a) as well as producer supply and processing organizations and groups (e.g. producer unions and syndicates, associations, and local development entities) are also significant in contributing to market-oriented arrangements. It goes without saying perhaps that a range of profit-making activities may be undertaken by producer organizations that contribute to market linkages via post-harvest storage and handling, processing or other value-chain supports. All are needed to bring smallholders into the market arena. As Swanson states (2008)

> All are needed, but it depends on the product and market. For example, if you are talking about Sri Lanka selling pickles to McDonalds in Japan, then contract farming is the only viable option. If you are talking about selling vegetables, chicken, pigs, eggs or milk products to urban markets, the producer groups are the more common model. (Swanson, 2008, personal communication)

In the *Journal of International Agricultural Education and Extension*, Swanson recommends that market-driven extension systems “be carefully considered by extension leaders in … developing countries” (Swanson, 2006a, p. 1), advice also advanced by the World Bank in its *WDR 2008: Agriculture for Development*, p. 128). The WDR2008 report outlines the World Bank’s perspective on strengthening farmer links to the market, stressing the investment role of the public sector and the emerging role of the private sector. This private sector approach has emerged as necessary in part because of government withdrawal from previously public services and lack of adequate development results. Globalization, increasing population and concerns regarding productivity further spur the dynamics of the market-link imperative.
The World Bank’s support for market-oriented extension is intended to foster an environment for private sector extension. In contrast, this paper makes the case for public sector extension to help smallholder farmers to develop market-driven arrangements. While the emergence of private sector extension services may be desirable once market-oriented arrangements are in place, the fact is that most extension systems of less developed countries are still provided via the public sector.

**Key Market-directed Strategies**

Of the several market-driven strategies for enhancing farm incomes for smallholder farmers, contract farming and cooperative marketing arrangements are considered key (Delgado, et al., 2001; von Braun, 2004).

**Contract Farming**

Contract farming schemes involve smallholder connections to one of a variety of business entities, such as corporate buyers, commercial companies and estates, supermarkets and processors, all of whom may be potentially helpful in overcoming smallholder asset constraints and providing technical assistance. Contract farming, according to Prowse (2007, p. 1) “clearly offers numerous opportunities for smallholders. It gives access to a reliable market, provides guaranteed and fixed pricing structures, and most importantly provides access to credit, inputs and production services (see, fertiliser, training, extension).”

**Marketing Cooperatives**

Marketing cooperatives also constitute a key strategy for farmers to link to markets, either by farmers becoming members of or else by establishing this type of organization. The U.S. Overseas Cooperative Development Council suggests that cooperatives in general are strategically important pathways to economic, democratic and social development in the global economy (OCDC, 2007).

**Alternatives**

Other strategies, other than contract farming and marketing cooperative organization, contribute to increasing farmers’ incomes and in some cases link farmers to markets although their main purpose may not necessarily be to create market linkage. These alternatives include farmer-to-farmer schemes and leading or prominent farmers (FAO, 2008a). In addition, new institutional arrangements are also being developed between government and producers, such as the Produce Foundations in Mexico, which are created, led and administered by producers with matching funds provided by federal and state governments, agricultural producers and the private sector. Such innovations are needed in less developed countries if farmers are to be effectively linked to markets.

Other needed institutional arrangements include (a) unified real estate registration systems and registering private rights to rural farm land; (b) self-sustainable rural financial systems; (c) rural information and advisory services and strengthening applied research and veterinary services where these do not exist; and (d) government capacity to analyze and respond to the impact of related sectors on agriculture. Agricultural markets and marketing information systems (MIS) are essential and too often lacking because of inadequate infrastructure, both institutional and physical (e.g., inoperative rail systems and roads riddled with unofficial toll payments) (FAO, 2001). Extension can play an important role in assisting producer groups to routinely monitor market information.

**Women in Agricultural Marketing**

Too often overlooked is the role of women in marketing and in the development of marketing organizations. Women in
Jamaica and previously in Ghana, are primary marketing agents. Extension practitioners and professionals in general need to be particularly aware of women’s contributions and potential in developing marketing organizations. In most developing countries extension can have significant economic impact by helping women to organize into sustainable producer organizations, especially those that serve emerging markets and high-value food products such as vegetables, fruits, and livestock products. In addition, it merits noting that women invest their farm earnings in the family in the form of better nutrition, health care and education for the children, which is a strong reason why extension systems should give more attention to organizing women's groups to improve rural livelihoods.

**Contract Farming: Advantages and Disadvantages**

In contract-farming schemes, farmers become organized under the aegis of a private company. Carried out according to an agreement between a buyer and farmers, contract farming establishes conditions for the production and marketing of a farm product or products.

According to the WDR2008, "Contract farming is a system where a private sector firm provides farmers with inputs – such as credit, fertilizer and seed – in exchange for exclusive purchasing rights for the resulting crop” (p.128). However, this definition ignores two quite different contract-farming arrangements: marketing contracts and production contracts.

Indeed, there appears to be a tendency away from ‘marketing contracts,’ whereby farmers control the production of products, and increasingly toward ‘production contracts’ where companies provide the inputs, processing methods, and output standards, and the farmer becomes a manager of the production system (Rivera, 2008b, p. 28). The FAO’s FAQ website (2008b) recognizes the distinction between the two types of contracts in its statement, “the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation and the provision of technical advice” (FAO, 2008b).

Agricultural producers in livestock production (especially in the poultry and hog industries), are especially confronted with significantly changing relationships in their contractual relations with companies and their role in farming – specifically whether their future points toward their continuation as independent producers or to becoming company-directed field managers.

**Advantages**

Certainly both partners (buyers and farmers) engaged in contract farming can benefit from the contractual relationship. Farmers have a guaranteed market outlet, reduce their uncertainty regarding prices and often are supplied with loans in kind through the provision of farming inputs such as seeds and fertilizers. Purchasing firms benefit from having a more guaranteed supply of agricultural products that meet their specifications regarding quality, quantity and timing of delivery (FAO, 2008b).

Contract farming enables smallholder farmers to participate in new high-value product markets and improves quality standards, thus increasing and stabilizing farmers’ incomes. Because most farms in the less developed countries are smaller than two hectares, integrating smallholder farmers into global value chains is an important step towards reducing poverty.

**Disadvantages**

As with any form of contractual relationship, there are advantages and also potential disadvantages as well as risks. If the terms of the contract are not respected by one of the contracting parties, then the affected party stands to lose. Common contractual problems include farmer sales to
a different buyer (side selling or extra-contractual marketing), a company’s refusal to buy products at the agreed prices, or the downgrading of produce quality by the company. A frequent criticism of contract farming arrangements is the uneven nature of the business relationship between farmers and their buyers. Buying firms, who are invariably more powerful than farmers, may use their bargaining clout to their short-term financial advantage, although in the long run this would be counterproductive as farmers would cease to supply them. These problems notwithstanding, the balance between advantages and disadvantages for both firms and farmers seems to be on the positive side: contractual arrangements are more and more frequently being used in agriculture worldwide. Indeed, globalization and liberalization have popularized the concept of contract farming (Singh, 2006).

Singh argues, however, that agribusiness firms in India have been found to overprice their services, pass on the risk to the producers, offer low prices for produce, and delay payments. Some firms look at contracts only as a management tool and a strategy to overcome procurement and related business problems. He argues “Contract farming tends to shift production in favour of export-oriented and cash crops at the cost of basic food crops for the poor. This could lead to higher prices for food commodities and products, especially for non-contract farmers. The contract system could also lead to over-exploitation of resources. Firms tend to move on to new growers and lands after exhausting local resources such as land and water” (Singh, 2006).

Prowse (2007), although he favors contract farming, also notes that contract farming presents risks for smallholders. He cites examples: (a) contract farming can contribute to a loss of autonomy over farm enterprises; (b) substantial production risks are faced if the technology or the company’s forecast is inappropriate, (c) the firm’s exclusive purchase rights can depress producer prices, or lead to late and partial payments. Increased indebtedness is not uncommon, (d) contracts can be verbal and if written are not always in the vernacular.” (Prowse, 2007, p. 1)

On the other hand Prowse (2007) notes that contract farming presents risks also for firms. He states “There is a large risk of smallholders’ side-marketing inputs and produce: fertilizer can be sold to increase liquidity; and post harvest produce can be side-marketed to facilitate faster access to capital, to seek higher prices, or just to avoid repayment. The limited literacy and education of some small farmers may increase risks for the firm, and a widely-dispersed smallholder population certainly increases costs” (Prowse, 2007, p. 2). Nonetheless, contract-farming arrangements are, as Swanson notes (2008, personal communication) often the only viable option for linking farmers to markets and stimulating agricultural production that competes in the global arena. Contract farming arrangements also conceivably fill in the void left by governments in the wake of liberalization by providing access to inputs, technologies, credit and other services. Given its potential, contract farming is given a central role in the latest strategy by the Partnership for Africa’s Development (NEPAD).

Contract Farming in Sub-Saharan Africa.

To revitalize the agricultural sector, NEPAD and the African continent’s leaders created the Comprehensive Africa Agriculture Development Program (CAADP), a new framework to reduce food insecurity and poverty on the continent. Embedded in CAADP’s priority investment is contract farming: “a business model that links production to markets by enabling smallholder farmers to practice high-value agriculture and reach markets at all levels – national, regional and international” (NEPAD, 2006). This agricultural business model has been endorsed by NEPAD, the Africa Union, the Common Market for East
and Southern Africa (COMESA), the Economic Community for Western African States (ECOWAS) and the Southern Africa Development Cooperation (SADC).

In its East Africa Policy Brief (2006) NEPAD underscores that smallholder farmers are scattered across farmlands, keeping the cost of contract farming transactions high, and argues that this can be reduced through “effective farmer organisations that enhance business skills and the bargaining power of farmers” (p. 2). Almost as an after-thought, the policy states, “while contract farming has obvious benefits for smallholders, it is not a solution for every market development challenge. Poor infrastructure, weak contract enforcement, limited markets for financial services and political interference in product and input markets undermine the viability of contract farming arrangements” (NEPAD, 2006, p. 2).

To its credit the NEPAD Policy Brief lists various reasons why contract farming has not (yet) worked well in Sub-Saharan Africa; these include: (1) “Promoters bear high transaction costs because of poor infrastructure and dealing with individual farmers scattered over large areas. (2) Farmer organisations are weak. Most lack managerial, leadership and production skills. (3) International trade agreements put up barriers to trade and deny agricultural products from Africa fair access to world markets. (4) High production risks due to crop failure, resulting in insufficient volumes, or products that do not meet the standards. (5) Inability among farmers to predict prices or factor in unfavorable exchange rates and other marketing risks. This sometimes leads to buyers ending contracts prematurely. (6) Promoters take advantage of farmers’ weak bargaining position to exploit them” (NEPAD, 2006, p. 3).

Still, NEPAD’s East Africa Policy Brief states “Contract farming (CF) may have different definitions and motivations, but basically, it commits the farmer to produce and supply a specified agricultural product and the entrepreneur to buy at an agreed price. This relationship thrives where there are incentives and ways to monitor and enforce agreements” (NEPAD, 2006, p. 2). As NEPAD notes, contract farming arrangements are more significant with high-value crops and animal products, and cites Zambia, where “all the cotton is grown by contract farmers” (2006, p. 2). It also claims that in many parts of Africa, “contract farming has proved effective in integrating smallholder farmers into commercial agriculture (ibid., p. 2),” and then cites Mozambique where, according to the Brief, “most of the more than 400,000 producers that benefit from CF are smallholders with less than one hectare of land” (ibid., p. 2). To further bolster the argument for the renewed emphasis on contract farming arrangement, the Brief estimates that by 2020, Africa’s demand for staples such as maize, cassava, rice, sorghum, beans is expected to rise as the continent’s population reaches 1.26 billion. This prediction, according to the NEPAD Policy Brief, “will create a big opportunity for contract farming, especially as half the people will be in towns and unable to grow their own food” (NEPAD, 2006, ibid., p. 2).

One wonders however whether Africa is once again off to a false start (Dumont, 1962; 1966), by insisting so strongly on the merits of contract farming.

**Cooperatives: Advantages and Disadvantages**

Marketing cooperatives are distinct from other producer organizations which include (a) fertilizer supply associations and processing plants, (b) local village-level groups, (c) unions and syndicates, as well as (d) advocacy cooperatives (Rondot & Collion, 2000). However, producer organizations, other than marketing cooperatives, often educate farmers about markets, e.g. input supply systems that educate through advertisements and on-the-ground training about the applicability of
their products to increased commercial production. Nonetheless, marketing cooperatives provide more inclusive guidance to their members regarding markets and market demand.

**Advantages**

In general, marketing cooperatives, as with other agricultural businesses, are a major tool in local economic development and are being used in innovative ways to serve rural constituents (Merrett & Walzer, 2001). Jones and Svejnar (1985) show the positive productivity effects of worker participation in management, profit-sharing and worker ownership in Italian producer marketing cooperatives, at one time “one of the largest and fastest growing systems of marketing cooperatives in industrialized Western economies” (p.1). Gall and Schroder (2005) note that cooperatives in general can make a unique contribution to new forms of food chain organization. Throughout history, rural smallholders have formed various forms of associations to confront access-barriers to the market. It is estimated that 250 million farmers participate in agricultural cooperatives in developing countries. Agricultural cooperatives are considered to be a fundamental pillar of rural development strategies, as well as a core institution in the process of governance, decentralization and agri-business development. In Ethiopia, agricultural cooperatives are advocated by the government as key market institutions to exploit Ethiopia's agricultural growth potential.

There are however many challenges to growth in smallholder agriculture. Among them are (a) low-value goods, (b) market pressure from structural adjustment and market liberalization, (c) the undermining of existing markets by relief agencies, (d) oversupplied markets (e.g., the coffee market), (e) decline in commodity prices (including of so-called ‘cash crops’), (f) inconsistent policy with no medium- to long-term vision, (g) lack of market information, (h) poor organization and lack of scale, (i) declining infrastructure, (j) shocks from natural and civil turbulence, and (k) new trends in the wholesale and retail sectors regarding standards and regulations (Best, et al., 2005). Nonetheless, Best, et al. (2005) cite examples of smallholder farmers who have confronted these challenges by (a) increasing competitiveness through achieving economies of scale and value addition by collective actions and improved production, post-production handling and processing, and marketing; and (b) diversifying their production, by incorporating higher value crops or livestock activities that have an identified demand (Best, et al., 2005, pp.23-24.). Wennink, et al. note (2007), farmers' organizations also play a significant role in social inclusion, in particular in promoting access of the poor to agricultural services.

**Disadvantages**

But cooperatives also have their limitations. Prowse (2007) notes they frequently lack managerial capacity, sometimes struggle to achieve coherence among a diverse membership, and are subject to elite capture. He suggests there is a danger of placing too many expectations on these often incipient rural efforts. This is true for marketing as well as other cooperative ventures.

Indeed, membership and joint ownership are central to the concept of cooperatives. Despite possible managerial problems, lack of cohesiveness as an economic interest group and the ever present possibility of developing privileged leadership in the organization, not to mention the free-rider problem where some individuals either consume more than their fair share of a common resource or pay less than their fair share of the cost of a common resource, even so cooperatives provide a way for producers to retain ownership of their produce as it moves through the supply chain.
“Major problems confronting cooperative development today are the legacies, misconceptions and mixed history of cooperatives in developing countries,” according to the U.S. Overseas Cooperative Development Council (OCDC, 2007, p. 37). Critical differences exist between groups that advocate for or represent farmers and cooperatives as group-based businesses with member ownership as a main principle (OCDC, 2007, p. 37). The real challenge, according to the OCDC, is to find effective ways to help fledgling cooperative movements reach scale, “and reorient development professionals’ thinking to recognize the universality of cooperatives as one means to achieve poverty alleviation and economic opportunity in the developing world” (ibid., p. 37). Organizing women into sustainable producer organizations holds particular promise for enhancing rural livelihoods and economic development in general. Extension has a critical role to play in this regard.

Institutional Innovation

Cooperatives, to remain competitive, are increasingly forming alliances with other cooperatives or related businesses (Gall & Schroder, 2005, p. 3). Extension can play a strategic role in helping farmers create producer groups but also to negotiate directly with large-scale traders, exporter or value-added processors. Prowse (2007) advances the notion, which he attributes to the WDR2008, that “A greater focus on strengthening market-oriented producer organizations and dispute-resolution mechanisms between farmers and firms may increase the chances of win-win outcomes from this form of institutional innovation” (p. 1). In the ODI (Overseas Development Institute) Opinion 87, Prowse welcomes what he sees as the WDR 2008 “emphasis on mitigating risks by linking contract farming with market-oriented producer organisations…” (Prowse, 2007, p. 1). However, Carter (2008, personal communication), commenting on contract farming and its disadvantage for smallholders, states “…it seems likely that given the transaction costs involved in working with large numbers of small farmers, contracting buyers are likely to increasingly focus on a small number of capital-intensive producers who are able to invest in producing the quality and quantity that they require. This could have the effect, over time, of marginalizing smaller producers who neither can contract, nor find niche markets for their varied quality and quantity of produce.”

While Prowse applauds mitigating risks by linking contract farming with market-oriented producer organizations, Singh (2006) considers “contract farming has serious implications for existing agribusiness cooperatives” (Singh, 2006, p. 1). In such cases, he states “Cooperatives will likely have to compete with multinational firms in terms of providing competitive prices and other incentives to retain their producer members” (Singh, 2006, p. 1).

Certainly competition can be a major stimulus for the diffusion of new methods and ideas. Indeed, this proposition underlies the position of this paper, namely that if competition is created between contract farming and cooperatives, innovations (conceptual and technical) will come. NEPAD and CAADP might review the value of competition and include market-oriented cooperative development as part of their policy for Sub-Saharan Africa. However, while competition is generally desirable, it merits keeping in mind Singh’s argument that first “the smaller competitors must be strengthened in their organizational base” (Singh, 2006, p. 2).

Institutional Change and Expanded Educational Networks

Public sector extension systems in less developed countries need to shift some efforts from a production-orientation to a market orientation. For this to happen, two challenges must be confronted: (a)
institutional development through leadership that reorganizes its management to promote farmers’ preparation to engage in market-driven organizations, and (b) human resource management and development programs that operate in an expanded educational network.

The Institutional Challenge
The institutional challenge involves reorganizing extension to create strategic plans and special units with the purpose of developing information on market-driven strategies, in particular for smallholder farmers. Market analyses and market signals are important to priority setting for extension services, to help ensure that producers find profitable market opportunities for the products with which extension services are working.

Certainly productivity and production remain key areas for extension support to marketing. At the basic production level extension needs to promote (a) production technologies for decisions on: choice of crop or product to meet market requirements, timing production to market needs, and reducing production costs, and (b) post-harvest technologies for information on storage, processing and post-harvest handling practices. But equally important are (c) marketing extension services for help in linking producers to markets, organizing new marketing channels, improving marketing efficiencies, group formation and cooperative action in product marketing, and accessing government and private market services through production contracts, production credit or inputs, and specialized advisory services (Narayanan, 1991). Also, (d) market information systems (MIS) are needed to provide information on prices, market locations and knowledge of alternative markets, grades and standards, and quality requirements of markets.

The Human Resource Management and Development Challenge
A major challenge confronting extension in less developed countries is to design human resource management and human resource development training programs that include connection with a range of educational activities that relate to possibilities for farmers to link to markets (Rivera and Alex, 2008). To meet this challenge, more of the same is not enough. An agricultural workforce education network is required; one that connects formal education, inservice training, and nonformal outreach, as well as one that recognizes knowledge as the product of indigenous and modern experiments and learning.

Training is critical for building individual capacity to operate effectively within the sector as well as to build the specific capacity in individuals to further organizational objectives. For the latter, training must align with an organization’s goals in the form of development-oriented training, not ad hoc or survival-type training (Gooderham & Lund, 1992). Understanding organizational goals is essential to strategic planning and the management of human resource development and a prerequisite to adoption, which must enable production to respond to market signals. An exclusive focus on production technology, ignoring market demand and farm budgets, has been the fatal weakness of many past extension programs (Swanson, 2006b, p. 4). Public sector extension systems need to engage in market analysis and demand for competitive, new technologies.

Applying knowledge to production systems and value chains requires educated and motivated human beings. Natural and financial capital may be essential but human capital, i.e., the stock of productive skills and technical knowledge embodied in labor is paramount for exploiting these forms of capital and for developing institutional and social capital.
capacity building. Greater commercialization of agricultural systems and increasing trade liberalization dictate a need for greater capacity on the part of the agricultural workforce, and makes the case for the overhaul of extension as a concept and practice.

**Conclusion**

Change today is global and rapid. A new paradigm has emerged towards a market-driven, agribusiness orientation, stressing comparative advantage in a highly competitive global market (Rivera et al., 2001, p. 4). This globalization and market orientation is placing new pressures on governments and their people to produce more, for both domestic consumption and trade. Contract farming schemes and producer cooperatives are important avenues toward meeting these demands in the context of current development needs, and extension can play a significant role of fostering farmer connections to these organizations and, further, to helping farmers develop fledgling businesses and cooperatives.

In the final analysis, clear challenges confront public sector extension in the less developed countries: (a) to support commercial interests, through contract farming and the development of producer cooperatives, (b) to advance the worth of human capital by strengthening human resource management and development programs, and (c) to promote a knowledge economy through the advancement of appropriate institutional innovations (Rivera, 2008b). The implication with respect to institutional innovations is that, when farmers are organized, then needed technical innovations are more likely to be explored and, if appropriate, subsequently adopted.

Government continues to bear various responsibilities vis-à-vis both the commercial sector and the general public good. Among these responsibilities is its role in balancing sector interests in agricultural and rural development.

Economists, albeit with cautionary notes, are beginning to call for re-expansion of the role of the state as an essential ingredient in policy development, regulation and the provision of basic services, as well as in facilitating export growth (Khan, 2006).

The present market-oriented ideology is radically affecting the priorities and promise of agricultural extension. The challenges ahead for public sector agricultural extension and its reform are no longer issues of a system in transition but are inherently those that suggest major overhaul toward small farmer organization and income generation through market orientation.

**References**


Knowledge Gaps and Training Needs of Afghanistan’s Agricultural Extension Agents

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The primary focus of this study is to determine the knowledge gaps and training needs of Agricultural Extension agents from the Eastern region of Afghanistan. Survey responses from all Extension Agents stationed in Laghman, Kunar, Nangarhar and Nuristan provinces are reported in this paper. Since the study targeted the entire population of Extension Agents (N=104) in all Afghanistan’s four eastern provinces, no sampling procedures were used. Furthermore the results may be generalizable only to the study population. A seven part questionnaire consisting of 4-point Likert scales was used to solicit response from the extension agents. Cronbach’s alpha coefficients for 92 cases and 147 items produced a reliability statistics of 0.92 suggesting that the study scales have a relatively high internal consistency. Descriptive statistics were used to analyze the data. All the survey respondents were married males between the ages of 22 and 60 years. Respondents consider themselves specialists in six major areas: Vegetable production (26%), Plant Protection (16%), Farm management (10), Fruit production (6%) and Agronomy (5%). Majority of respondents (> 60%) specialize in production oriented agriculture with less than 35% specializing in Market Extension. While most respondents claim to have high knowledge of Market Extension and crop production methods, an actual knowledge tests administered to the respondents during a 30 day training section covering extension delivery processes and vegetable and fruit production techniques revealed a rather low level of knowledge of these areas. Self-perceived knowledge of Farm Management and Financial techniques was generally low.

Keywords: Agricultural Extension, Marketing Extension, Extension Agent, Knowledge, Perception

Female Students’ Participation in the University Mid-Carrier Agricultural Extension Training Programme in West Africa: Constraints and Challenges

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Many studies in Africa indicate that the poor achievement of the continent’s agricultural targets in terms of efficiency, sustainability and equity is largely due to the predominant practice of directing training and resources to men only. The SAFE training program set up in Universities for mid career agricultural extension staff of the ministry of Agriculture has only recorded 21% female participation so far. Some of the issues highlighted in this study include: the need for policy shift in favour of women to enable research and extension to focus more on women; low educational level of most women; inability of women to rise up to decision making positions; need for role models within the agricultural extension service system; mid-career women in agricultural extension service need to improve their skills and competence; and mid-career women need education and training to reduce the influence of culture and religion on their attitudes. Analysis of the major challenges to women participation in the mid career training programme of the three universities also indicate the following: limited scholarship opportunities

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that target professional women; family problems; communities’ low perception of women’s talent and potential; limited access to information on opportunities for further education; lack of implementation of the various Governments’ Affirmative Action; the perception of agriculture as a domain of men; and socio-cultural/religious barriers. Among the recommendations for improved women participation in the mid-career agricultural extension training programme were: putting in place admission policies that ensure at least 25% of set places for female extension agents; instituting a scholarship scheme for female mid-career students; setting up of policies to employ more female agricultural extension workers as well put up other types of mid career programme more suited to professionals like the sandwich and the distance learning programmes.

**Keywords:** Mid-career professionals; female students; participation; challenges; Mid career training programme

### Issues, Trends and Constraints in Integrating Technology into K-12 Education: A Comparative Analysis of Japan, Trinidad and United States

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The paper analyzes trends, constraints and issues in integrating ICT in selected schools in Japan and United State and in on-going technology integration program in Trinidad. Data on Japan and U.S. was collected through the Japanese Fulbright Memorial Fund U.S. Japan teacher exchange program using questionnaire survey and a combination of participant and non-participant observation. Trinidad data was collected using an open-ended qualitative survey of teachers using a SWOT analysis framework. Data analysis included SPSS program, anecdotal reports and content analysis of qualitative data. Major findings included very positive perceptions among teachers in all three countries concerning the potential transformative impact of ICT in the teaching-learning process. Japanese schools evidence a surprisingly low level of technology integration compared to their U.S. counterpart. However, ICT integration in the U.S. has had less than transformative impact as teachers continue to infuse low level ICT programs to teach traditional curriculum. Barriers to technology integration included poor training, lack of skill, rigid administrative structure (especially in Japan) and poor technical support. Paper concludes by noting that technology operates within a social-institutional milieu, and until effort to integrate ICT in the educational systems takes full cognizance of this technology-social institutional interaction, ICT will continue to fail to achieve its maximum transformative potential.

**Keywords:** ICT; Technology integration; International Comparison; SWOT Analysis

### Revisiting Storytelling in Ghana: A Possible Link to Leadership Development Through the Agricultural Extension Service

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The purpose of this study was to explore the current status of storytelling in Ghana from the perspective of agricultural extension directors. Specifically, this study determined barriers to storytelling experienced by families, identified skills and values learned through storytelling, and identified uses of storytelling within the Ghana agricultural extension service. Ghana and other countries in sub-Saharan Africa (SSA) face a number of development challenges. Formulating solutions to these development challenges will require effective leadership. Based on culture-fit theory and a conceptual model that recognizes storytelling as a connection point for leadership development in SSA, it is important to gain an understanding of the current status of storytelling. This exploratory study was an attempt to fill this gap in the literature.
This study concluded that storytelling in families has challenges centered around leisure time priorities, image of storytelling, and technology. It is implied that the barriers to storytelling might be an indication that storytelling is becoming a dying tradition in the SSA culture. However, this study found that storytelling has a number of merits. Ghana agricultural extension directors reported that they learned skills and values such as problem-solving, honesty, responsibility, listening, and respect by their personal involvement in storytelling. It was further concluded that storytelling is used within the Ghana agricultural extension service as a communication technique, teaching method, and bringing about a common understanding within the organization.

**Keywords:** Ghana, leadership, organization, storytelling, sub-Saharan Africa

**Assessment of Technical Efficiency of Farmer Teachers in the Uptake and Dissemination of Push-Pull Technology in Western Kenya**

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Use of farmers as extension agents to disseminate new technologies to others is increasingly being adapted in smallholder farming systems constrained by low adoption of technologies. This paper examined technical efficiency of farmer teachers in the uptake and dissemination of a ‘push-pull’ technology (PPT) for control of Striga weed and stem borers in Western Kenya. A total sample of 112 farmer teachers (FTs) and 560 follower farmers (FFs) who had adopted the PPT were randomly selected and interviewed between July and August 2007. The farm production constraints significantly reduced with an overall 53% margin following PPT uptake. Overall, there were considerable benefits from training resulting in significant differences in understanding and applying of PPT. The FFE strategy had a significant multiplier effect in increasing PPT uptake. The average efficiency by FTs was 78% while FFs had 71% suggesting that the interviewed farmers operated below the frontier output levels. The efficiency differences are significantly explained by farmer teachers’ interactions with neighbouring farmers, farmers’ memberships in local groups, type of farmer, farmer’s age, marital status and farmer’s level of education. Improving capacity of farmers to operate as extension agents can be achieved by providing incentives and training, increasing field demonstrations, providing Desmodium seed and credit for other needed inputs to accelerate PPT transfer.

**Keywords:** Push-pull technology; Farmer teachers; Follower farmers; Farmer-to-farmer extension; Technical efficiency.

**The Comparative Role of Intervening Variables in Understanding Farmers’ Adoption Behavior**

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The paper compares the influence of intervening variables and the characteristics of the farmer and the farm (independent variables) on the adoption behavior of farmers for recommended maize agronomic practices. The purpose was to indentify the most important determinants associated with behavior change. A total of 107 farmers out of a population of 214 were randomly selected from two adjoining districts of South Africa and Lesotho. Chi-square and correlations and regression analyses were used to determine the relationship between the independent (characteristics of the farmer and farm) and intervening variables.
variables. Clear differences occur between the independent variables (which included age, gender, education, farm size and total area under maize cultivation) in regard to their influence on adoption behavior, but these influences also vary significantly between the practices. It was also found that an independent variable can have a big influence in the adoption of one of the recommended practices but not on the others. In general, their influence is limited, and together their total contribution in explaining the variance in adoption (R2) varied between about 20 to 40 percent. The influence of the intervening variables, which are primarily need, perception and knowledge related, was much more consistent and much bigger, measured both as correlations and regressions. The total contribution (R2) of intervening variables varied between 50 and over 70 percent, which clearly supports the research hypothesis, namely that their prediction and explanation value in terms of behavior is much bigger than that of independent personal and environmental factors.

Keywords: Adoption, Intervening variables, Behavior change, Decision-making, Innovations

Understanding Hispanic Farmers and Their Educational Needs: A Case of Southwestern Michigan

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The growth of the Hispanic population in farming and food systems presents new opportunities as well as challenges for agricultural service agencies. This study was conducted in four counties of southwestern Michigan to serve as baseline information when assisting small, minority and disadvantaged farmers. This paper is based on survey data collected through personal interviews with 82 farmers. Findings show that Hispanic farmers manage mainly blueberry farms using family labor and rely on past experience to operate their farms. Hispanic farmers are not a homogeneous group and one extension or education model may not be useful for all the Hispanic farmers. Educational programs focusing on farm management, state and federal regulations, and methods to access help from farm services agencies during the first years of farm ownership are needed. The methods used to disseminate agricultural information and education must be sensitive to Hispanic farmers’ characteristics, and could include multimedia such as DVDs, CDs, or MP3 audio.

Keywords: Hispanic farmers, Needs assessments

Agro-ecotourism in Costa Rica: A Participatory Rural Appraisal Case Study

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In Costa Rica, agro-ecotourism, a merger of ecotourism and agro-tourism, is gaining importance as a viable economic development activity. In this paper, we consider the theoretical frameworks that link agriculture, ecology and tourism. Then we discuss the methods through which we conducted a modified participatory rural appraisal (PRA) of an agro-ecotourist association in the Limon region of Costa Rica. We conclude our paper by making recommendations for further development of the agro-ecotourism association in Costa Rica.

Keywords: Agro-tourism, Participatory Rural Appraisal, Costa Rica, Farmers Networks
A Model for Developing a Well-Prepared Agricultural Workforce in Egypt

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Agriculture is an important sector of the economy of Egypt. While a system of Agricultural Technical Schools (ATS) is in place in Upper Egypt, there has not been put in place an effort to help ensure that students in those programs are adequately prepared to enter the workforce and be productive. The model that was developed begins with the needs of agricultural business and industry and the perceived preparedness of ATS graduates to enter the workforce. The differences between need and preparedness generate a skill-gap that serves as the basis for curriculum design. Curricular change includes skill development, internships, decision-making and leadership, with input from the external advisory council. Coupled with curricular improvement, the model allows for faculty development to assist ATS instructors in active learning, competency assessment, leadership activities and internship supervision. A train-the-trainer model utilizes agriculture faculty members from Egyptian universities to provide on-going instruction.

Keywords: model development, secondary schools, Egypt, agricultural education, train-the-trainer

Promoting Youth Development in a Territorial Context: The Case of the Yeguare Region, Honduras

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The purpose of this research was to determine the impacts of the implementation of a territorial model of development in the Yeguare Region of Honduras. The research question looked to determine the impact of the territorial approach on the youth development of the region. The purpose was achieved through the following research question: (a) What has been the impact of the youth participation, and vocational education for the youth in the Yeguare Region? This study used mix methods. Quantitative and qualitative methods permitted to gather and analyze different types of data of the project. The quantitative analysis included descriptive and inferential statistics. The qualitative analysis elaborated and expanded the quantitative analysis. Three themes related to the impact of the territorial model of development in the Yeguare Region emerged during the research. Youth leadership and entrepreneurship, youth expectations and future plans, and occupational status and welfare of the families were the emergent themes for youth development. The contribution of this study to the field of sustainable development was to expand the knowledge about the impacts of a territorial model of development in rural Honduras. Also, policymakers and project stakeholders may use this information to plan, design and implement effective development programs, and may decrease project expenditures, increase income, and benefit the communities.

Keywords: Youth development, Honduras, territorial approach, international development

Using Mobile Technology in an Extension Leadership Development Program

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Mobile learning is changing the way education is viewed worldwide. This new style of learning, which has already been applied by a number of corporations, may offer similar benefits to adult education programs offered through Extension. Mobile learning may offer Extension a way to extend their
educational reach to adults outside traditional classrooms or lecture halls. One statewide Extension program explored mobile learning within an agricultural leadership program. The program is geared toward opinion leaders in agricultural and natural resources industries in the state, and focuses on 11 face-to-face seminars that occur within the state, around the country, and culminates in an 18-day international seminar. Mobile learning was utilized in this program to increase the participants’ educational experiences between these seminars, as well as offer continuing education to those who had graduated from the program. The purpose of the study was to explore the relationship between mobile technology, in the form of iPods, and the professional development experience of participants in this program. The study took a mixed-methods approach. Results of the study found that participants had a “great deal” of comfort with the iPods and listened to podcasts on a variety of topics. The most popular benefits of using the devices were the ability to share information, the mobility of the device, and access to educational content. The value of mobile learning in Extension programming is the ability to take advantage of “learning episodes” and extend Extension programs to individuals who might not otherwise have had the opportunity.

**Keywords:** Mobile Learning, Technology, Leadership Development, Extension Teaching Methods, Adult Learning

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The Impact of Cross-cultural Training Experiences on Malian Journalists Who Report on Agricultural and Environmental Issues: Did Their Views on Job Duties, Media and Ethics Change?

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Mali’s transition to a functioning democracy, including a future with national food sufficiency and a sustainable environment, is best served by a free press system. This study provided evidence a cross-cultural professional development program could influence the planned behaviors and subjective norms of Malian journalists. The journalists were mostly males and varied in their professional experiences. Five months post-professional development, the journalists indicated their opportunity to “develop a specialty” was the most important aspect of their job. They perceived the most important function of news media was “to provide analysis and interpretation of complex problems” and “to get information to the public quickly.” The participants viewed none of the ethical issues as being more than slightly justifiable. In comparing Malian journalists’ views five months after professional development training, the participants placed more importance on salary and, to a lesser extent, fringe benefits post-training. Participants developed a greater appreciation for helping people and developing a specialty, and placed more importance on staying away from stories not supported by factual information. The journalists viewed the role of media in discussing national policy, setting the political agenda and being an adversary of business as more important post-training. The journalists’ views of the justifiableness of ethical issues mostly decreased. The most noteworthy decreases were on issues of disclosing rape victim names, paying people for information, and using hidden microphones and cameras. It is recommended similar training experiences should be conducted with other journalists in Mali and in fledgling democracies around the world.

**Keywords:** Attitudes, Journalists, Mali, Media Ethics
An Evaluation of Selected Technology Tools for Extension Work:
Use, Satisfaction, and Practice Change

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Increased access and use of technology is changing the way Extension professionals connect with each other and with clientele. To learn more about e-learning tools that could be used in training for Extension professionals or teaching, we conducted an evaluation of technology tools used during a training program. Technology tools for communication, project management, course management, creating podcasts, and others were deployed with 40 Extension professionals. Both immediate and follow-up evaluations were used to measure usefulness, use, and how tools were being used. Participants also provided written responses addressing how they were applying technology tools to other areas or their life and work. Tools that facilitated communication, project collaboration, and course management were highly rated. Overall, many (83%) participants appear to have adopted use of at least one of the technology tools and can share specifically how they are using them in Extension work.

Keywords: distance education tools, e-learning, evaluation

Training for Extension Professionals Using Blended e-Learning Tools: A Case Study

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In this paper, we share our experiences in planning, teaching, and evaluating a program for Extension professionals that was taught using blended e-learning methods of teaching. The authors were involved in a training program for Extension professionals called Blended E-Learning that taught a combination of knowledge economy-related subject matter content and technology content to 40 participants in 2007 and 2008. Immediate post-program and follow-up evaluations were conducted using fixed response and open-ended questions about subject matter content and technology tools. Participants reported significant gains in knowledge, awareness, and ability to share subject matter concepts with others. Furthermore, follow-up evaluations showed that over one half had adopted use of technology content in their extension teaching or to aid in program and/or curriculum development. Based on our experience and evaluation results, we share recommendations including a need to focus the scope of subject matter content, hold an initial face-to-face orientation, use project work to engage participants, and invest ample planning time as one would with traditional face-to-face instruction. Overall, the program shared in this article serves as a case study for teaching using e-blended learning in a way that has documented impact with learners.

Keywords: distance education, e-learning tools, program evaluation

Assessing the Impact of a Farmer Field Schools Project in East Africa

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Farmer field schools (FFS) are a popular education and extension approach worldwide. However, there is limited or conflicting evidence as to their effect on productivity, poverty, and empowerment, especially in East Africa. This study attempts to provide rigorous evidence to policymakers and other stakeholders on
the effectiveness of FFS in reducing poverty and empowering farmers. The researchers examined a FFS project in Kenya, Tanzania, and Uganda. Using a variety of methods, including a household survey, the authors describe participation in FFS and its effects on productivity, empowerment, and poverty. They find that households with younger heads and those who were also members of credit and savings organizations tended to participate in field schools. Female membership was 50%. Reasons for not joining FFS included lack of time and information. Adoption was significantly higher among the FFS farmers for nearly all of the major technologies, with the major technologies being improved crop varieties, soil fertility management, pest control, and livestock management. FFS had a significantly larger impact on crop productivity in Kenya than in Tanzania and Uganda; however, in the latter countries, women farmers’ productivity was significantly higher than men’s. Regarding poverty, there were differences between the three countries and also between FFS and non-FFS in various poverty indicators. While qualitative data suggest that FFS contribute to empowerment of individual farmers, these differences were not very apparent in the survey results, and more refined means should be used to show such evidence in future.

Keywords: Farmer field schools, impact, East Africa

Setting Agricultural Research Priorities: The Case for the Agricultural Sector in Swaziland

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The present descriptive study determined the research priorities in Swaziland agricultural sector as perceived by agricultural experts in field crops, horticulture and livestock sectors, and used triangulation of desk review, Nominal Group Technique and a modified Delphi technique. Findings revealed that the priorities from national policies are tied-up with the country’s greatest challenge of mitigating the effects of HIV and AIDS on food security, reduction of poverty, and sustainable development. The findings further revealed that forty-three areas in field crops sector needed research. Seven areas in horticulture were considered mostly in need of research. Eleven research areas were considered to be of high priority in the livestock sector. A considerable number of research areas in field crops, horticulture and livestock indicated that the current research system has not adequately addressed research needs, despite the efforts made by the private sector, the University of Swaziland and the Ministry of Agriculture and Cooperatives, for the country to achieve self-sufficiency in food production. From the findings, it was recommended that the research priorities should be used as basis for directing the limited resources in conducting agricultural research. The participation of all stakeholders would facilitate efficient use of resources, to enhance collaboration amongst research institutions. The University of Swaziland should develop research priorities aligned to national policies and objectives to facilitate funding for research by both government and donor agencies.

Keywords: Research priorities, agricultural research, agricultural sector.

Longitudinal Impacts of a Faculty Abroad Program: 1994-2007

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When surveyed, faculty generally 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 (Dooley, Dooley & Carranza, 2008; Towsic, N.D.). Sending faculty to programs abroad can therefore enhance academic potential (Özturgut, 2007). The 10-day 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 was for faculty participants to incorporate applicable global experiences into their teaching and research programs. The purpose of this study was to determine the longitudinal impacts of the FAS on participants from 1994–2007 in terms of teaching and research collaboration. As faculty participants reflected about their teaching and research impacts, a higher percentage of respondents had teaching impacts compared with research impacts (74 percent and 64 percent, respectively). In describing personal impacts participants’ comments supported the belief that the Faculty Abroad Seminar changed them, personally, and professionally.

**Keywords:** Faculty Abroad, International Experience, Mexico

### An Assessment of the Needs of Georgian Secondary Agricultural Educators

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This purpose of this study was to determine the perception of secondary educators involved in Future Farmers of Georgia (FFG) schools throughout the country of Georgia concerning their needs for furthering the existing framework of agricultural education. The researchers used a modified Delphi method to meet the aforementioned purpose of this study. The population for this study consisted of the high school agricultural education teachers and their administrators who were participating in the FFG Program (n=14). The teachers represented seven different school districts. Qualitative data collected from the probe (first round) was used to generate a series of 46 statements. In the second round participants were asked to rank the 46 statements using a five point Likert-type scale. Due to recent events in the Former Republic of Georgia, the third round could not be conducted. Therefore, the researchers concluded that the round two data would be used to meet the purpose and objectives of this study. Participants strongly agreed that the FFG program strengthens leadership skills among their students and students have become more involved in practical/labor activities. They also agreed that gaining knowledge and skills from the FFG program will improve the future development of agricultural education in the country. Participants also strongly agreed that improvement of schools’ materials, technology, and equipment are necessary to improve the FFG program. Participants were either neutral or agreed with the following statements: due to the FFG program, academic performance has been increased among students; and students have greater academic success in history and geography.

**Keywords:** Georgia, Caucasus, Delphi, Needs Assessment

### Citation Structure: An Analysis of the Literature Cited in the Journal of International Agricultural and Extension Education from 1997 to 2006

**Leslie D. Edgar,** University of Arkansas

The Journal of International Agricultural and Extension Education (JIAEE) has been a primary outlet of international agricultural development and education publishing and research dissemination. The purpose of this study was to assess ten-years of JIAEE to determine literature cited. The study used a quantitative content analysis design. Analyzed in this study were 144 research articles published in JIAEE issues I and III, from 1997 through 2006. There were 2,286 cited literature works identified in the journal. The average number of citations per article was approximately 20. Cited works from premier agricultural education journals were tracked for citation frequencies, in terms of author(s) and year of publication. A
Strengthening Faculties of Agriculture in Africa through Collaborative Post-Graduate Degree Training by U.S. and African Universities: The HEPAD Experience

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From the 1960s through the 1980s, U.S. universities, foundations, and the U.S. Agency for International Development (USAID) provided major support for higher education institution building and post-graduate degree training. Commitment to these programs largely disappeared during the 1990s. Signs of renewed commitment have appeared within the last five years, but many donors are seeking more effective and less costly capacity building and training models before launching major new investments. This paper draws insights for improved post-graduate training models from a project implemented by a partnership of two U.S. and three East African universities, called “Higher Education Partnerships for African Development (HEPAD): Long-term Training for Regional Agricultural Development in East Africa: Kenya, Tanzania, and Uganda.” The project was funded by the U.S. Agency for International Development from 2005-2008 as one of three pilot projects designed to provide guidance for an intended major program of USAID reinvestment in strengthening African universities, particularly Faculties of Agriculture. An important goal of the project was to identify ways of improving the cost-effectiveness of post-graduate training of African agricultural scientists, and the relevance of that training to national development goals. The paper summarizes issues, challenges, and lessons learned from this project. The contributions of the “sandwich program” training design and other program features to training effectiveness and cost savings are presented. Recommendations are made for improvements in long-term training design, faculty development, and project management.

Keywords: Agricultural Education and Training (AET), university partnerships, long-term degree training, capacity building, sandwich degree training

An Examination of Customer Satisfaction in the GGAVATT Program in Veracruz, Mexico

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The GGAVATT (Livestock Groups for Technology Validation and Transference) is a technology transfer program for livestock producers developed in Veracruz in the early 1980s. In this program, neighboring farmers were organized into groups of a minimum of 10 participants to receive technical advice from a research institution through a group advisor. The purpose of this study is to investigate the satisfaction of the GGAVATT participants in Veracruz, Mexico. Data were collected from 406 group participants and 38 group advisors during the spring of 2007 on: (a) the overall satisfaction with the GGAVATT program, (b) the quality of the experience with different elements of the program, (c) the demographic attributes of the respondents, (d) the demographic attributes of the group advisors, and (e) the economic performance of the group. The study showed that participants’ satisfaction with advisors, group interaction, and the
The overall GGAVATT program was quite high and comparable to levels observed for extension clients in the US. Although participants’ satisfaction with advisors and group interaction was quite high, there were significant differences associated with client and advisor attributes that are important to consider in order to maximize the quality and impact of extension programs. The results from this study suggest that advisors with another job may need to receive special training to help them increase the effectiveness of their delivery methods and conflict resolution skills.

**Keywords:** customer satisfaction, group extension, GGAVATT, homophily.

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**Participatory Agricultural Development in Nepal: Discrepancies between Policies, Views and Experiences**

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The objective of this study was to understand the government’s aims in promoting farmer participation in agricultural development in Nepal, and to explore the experiences of farmers in a Sustainable Soil Management Program. Focus group discussions and in-depth interviews were held with farmers, policy makers, and extension staff to collect mainly qualitative data. Data were also collected on the stated aims of farmer participation from government policy and program documents and from staff and officials. Findings suggest large difference between the official aims of farmer participation stated in national policy documents, interpretations in government’s program documents, views by extension staff and the experiences of farmers. Government policy stresses close coordination among research, extension and farmers but in practice farmers’ needs and priorities were not considered in program design. Extension staff directed farmer participation in the program mainly to generate the data for program reporting, while farmers often participated mainly for the ‘incentives’ offered. These results point to a need for stronger interaction and coordination between national policy makers, participatory practitioners, and farmers on setting the aims and type of participation in agricultural development, and in evaluating their achievement. Emphasis should be given to approaches based on co-learning between extension and farmers, to ensure that interventions developed are appropriate to farmers’ needs and resources. The finding that national policies on farmer involvement in development programs are not followed in program implementation suggests a serious need for awareness training and incentives systems for extension staff.

**Keywords:** participation, coordination, program evaluation, incentives, co-learning

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**Farmer Field School Completers’, Non-Completers’, and Non-Participants’ Perceptions of Integrated Pest Management: The Case of Trinidad and Tobago**

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**James R. Lindner**, Texas A&M University  
**David Dolly**, University of the West Indies

The Farmer Field School (FFS) approach to agricultural extension and education was designed to enable farmers to engage in decision-making processes on the ecology of their own fields. Since 2002, the Trinidad and Tobago Ministry of Agriculture Lands and Marine Resources has conducted FFSs focused on building farmers’ capacities for employing integrated pest management (IPM) practices, thus enabling them to discontinue dependency on pesticides as the primary pest-control measure. The purpose of the study is to identify and analyze 1) the relationship between participation status (i.e., completion, non-completion, or non-participation) and selected socio-demographic characteristics, and 2) the relationship between participation status and perceptions regarding the use of pesticides, their willingness to take on
the financial risk of adopting new farming methods, and the compatibility of IPM with local agricultural practices. The sample population (N=109) consisted of farmers classified as FFS completers (n=56), non-completers (n=15), and non-participants (n=38) from five FFSs in Trinidad. FFS completers possessed a greater concern for the environment than did non-completers and non-participants, are more likely than non-completers to be willing to take on the financial risks involved in the adoption of IPM on their farms, and believed more strongly than did non-completers that IPM is compatible with agricultural practices and the market in Trinidad and Tobago. With the results of the study, MALMR may employ strategies that impair or eliminate the factors leading to non-completion and non-participation, thus making FFS more accessible, increase participation, and enable more farmers to benefit from an agro-ecological approach to farming.

**Keywords:** pesticide agro-ecosystems analysis non-formal education

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**Service-learning Benefits Gained by Agricultural Students in Costa Rica: A Case Study**

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**Sandra Graham**, Tarleton State University  
**David Drueckhammer**, Tarleton State University

The purpose of the study was to determine the benefits of engaging agricultural students on a service-learning program in Costa Rica. This study used qualitative methodology to collect and analyze data. The context of this study was an upper-level undergraduate course that evolved five-week in-class preparation and a twelve-day study abroad service-learning project in Costa Rica. A new partnership emerged between The Agroecotourism Association of La Argentina de Pocora, Tarleton State University, and EARTH University. Six students participated in the program and they wrote in total 72 journals. Upon returning to the U.S. students developed a website for the Agroecotourism Association of La Argentina de Pocora. An open coding process was used to recognize patterns and themes on students’ journals. Three independent reviewers read each journal and the content were categorized. Students gained knowledge, fulfillment, and gratitude from participating in the service-learning program. Students also gained knowledge regarding tropical agricultural, sustainable production, and organic foods. Short-term study abroad programs that have service-learning components help students acquire cultural awareness and gain greater worldviews. Service-learning within the international agricultural context is not widely studied and accomplished. This study abroad program was a unique teaching and learning experience that could be used as example by many other educators across the nation. However, results from this case study could not be generalized. Programs like this could be used to promote in-depth learning opportunities and engage students in meaningful activities that will help them make the transition from academics to communities.

**Keywords:** Service-learning, study abroad, agricultural students, journals, and international development

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**Internationalizing Plant Protection through Extension: The International Plant Diagnostic Network**

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Global tourism and industrial trade are unwitting partners in the movement of exotic and invasive plant pests and pathogens. Coupled with natural movement by wind and storms, these factors are increasing the transfer plant pests and impacting agricultural operations around the world. It is important to develop
plans for protecting agriculture through early detection and accurate diagnosis of new plant pests arriving in our ports or becoming established in our ecosystems. The National Plant Diagnostic Network (NPDN) was developed in the U.S. in 2002, and has been used as a model in the development of other international networks of plant protection partners. The International Plant Diagnostic Network (IPDN) is a growing linkage of such partners in Central and South America, the Caribbean, Africa, and Eastern Europe. Important objectives of each of these two networks include training for diagnosticians, development and exchange of diagnostic and communications Standard Operating Procedures (SOPs), and use of Laboratory Information Management Systems (LIMS) to track samples and connect experts and diagnosticians around the world. The development and use of standard operating procedures (SOPs) for techniques and communication encourages trust between entities and allows for scientifically-based trade decisions. Many of these efforts are utilizing established connections with university and regulatory specialists, extension faculty, and producers. Rather than reinventing the wheel, the diagnostic networks aim to increase the number and quality of plant protection tools available for use within the existing Extension system.

**Keywords:** Agriculture, Detection, Diagnosis, Exotic, Protection

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**Participatory Innovation Development and Extension in Ethiopia: A Case Study**

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This paper describes a case study of the implementation of the process of participatory innovation development (PID) in Ethiopia. PID is an unconventional method to agricultural Extension and research efforts. It is an approach that promotes an engagement in a process that strengthens the capacities of agricultural services to support community-lead initiatives. This method is based on local innovation, social learning, and farmer-led experimentation. In this case study fieldworkers examined the creation of the Bedasa Grain Bank as a socio-economic local innovation. The researchers assessed the potential for participatory innovation development; i.e., Extension training and collaborative research. Through the use of participatory tools farmers, members of the Bank, identified strengths and challenges in scaling up their innovation; and developed a plan to investigate marketing and other training possibilities for capacity building. Although this study describes a context-specific case, the wider sharing of innovations discovered and developed by promoting local innovation provide ideas and inspiration for local experimentation elsewhere, so that new ideas can be adapted to other settings.

**Keywords:** Agricultural Development, Extension, Local Innovation, Participatory Approaches, Rural Development.

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**Using Modernized Relic Technology to Better Enable Sustainable Agricultural Practices in Developing Countries: A Philosophical and Practical Reorientation for Mali’s Farmers**

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*M. Craig Edwards,* Oklahoma State University  
*Theresa Pesl Murphrey,* Texas A&M University

Sustainable agriculture is important because it is a vital business component practiced by forward-thinking entrepreneurs (Geraci, 2004), including smallholder farmers and the industries that complement their work. Accordingly, the purpose of this paper is to share how the use of scale appropriate, relic agricultural technology may offer a viable approach for improving or further developing sustainable agricultural practices in a country with limited resources such as Mali. By using existing animal husbandry skills combined with education to use innovative relic technology, animal powered farm equipment, Malians can achieve an increase in food production, meaningful cottage industry development, and maintain their existing rural society. The approach shared is critical for a country that
has essentially no oil resources and limited funds. The authors propose introducing low cost technology to provide sustainable food production and drive the creation of complementary businesses. The long-term sustainable outcome would be stacked-entrepreneurial enterprises (McDonald, 2008) built on serving the agricultural and related employment needs of Mali’s rural villages.

**Keywords:** agricultural education, relic technology, sustainable agriculture

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**Selected Factors Affecting the Performance of Women’s Self-Help Groups in Western Kenya**

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Women frequently encounter greater limitations and fewer opportunities than men, especially in regards to income-generating activities. They may face social and economic constraints that perpetuates poverty and spans generations. However, significant opportunities exist in the informal, small-scale enterprise sector for which women may be advantaged. Community groups are popular institutions in Kenya’s rural areas; groups help provide services that the government may have failed to deliver. So, it is important to examine such affiliations as they may promote sustainable, local development. The purpose of this study was to describe selected factors affecting the performance of women who belonged to self-help groups in the Shaviringa Location, Vihiga District of Western Kenya. Semi-structured, focus group interviews were used to collect data from 11 groups, including 64 women. Factors that the groups’ perceived affected their performance included issues related to marketing, transport of goods produced, lack of motivations (intrinsic and extrinsic), general group governance, management, and leadership. Most women’s self-help groups were involved in entrepreneurial activities including some form of business ventures. However, it is recommended that the women’s self-help groups be provided training in the development of business plans and guidance about how best to avoid redundancy or undue duplication of income-generating projects and activities.

**Keywords:** Education, Kenya, Poverty, Women’s Groups

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**Communicating Agricultural and Health-Related Information in Low Literacy Communities: A Case Study of Villagers Served by the Bougoula Commune in Mali**

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Florence Dunkel, Montana State University  
Ashley Williams, University of Missoula  
Sam Magro, Montana State University  
Haoua Traoré, Peace Corps  
Abdoulaye Camara, Institut D’Economie Rurale

When villagers in Bougoula Commune in Mali were asked to rank their preference for receiving information about problems related to water, new technologies and communications (NTCs) and mass-media channels ranked the lowest. The respondents preferred interpersonal communication channels with the chief of the village followed by meetings, Extension agents and peer farmers, which were rated equally. Both genders seemed equally concerned about disease ranking malaria as the highest concern. The study showed gender differences, however, with regard to water-related infrastructure issues. Males were more interested in dams, wells, and bridges. Females were interested in issues that affected their traditional and daily duties, such as water pumps, access to water, and pollution by pesticides. Thus, issues may need to be addressed separately, according to gender. Careful attention also needs to be paid to the channels through which the educational information is sent. The authors recommend the
empowerment of opinion leaders to transmit appropriate information effectively to villagers because of referent power and their influence within their homophilic groups.

**Keywords:** low literacy; Mali; participatory assessment.

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**The Use of Micro-grants to Mitigate Gender Inequity in Afghanistan by Empowering Rural Farmers and Agribusiness Entrepreneurs**

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**M. Craig Edwards,** Oklahoma State University

Gender inequality is a worldwide problem; Afghanistan is no different. Women account for 60% of the population and are the primary agricultural producers and caregivers for their families. However, they are usually the last to receive developmental aid. To increase long-term sustainability in developing countries, NGOs need to design projects that benefit women. This qualitative study describes the outcomes of a micro-grant program targeting Afghan women but also included males. The grant recipients were empowered to increase family incomes, send their children to school, and support community development projects. These were positive indicators of social change in Afghanistan and may represent outcomes with applicability in other developing countries facing similar challenges.

**Keywords:** Afghanistan, Entrepreneurs, Gender Equity, Micro-grants

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**International Implications for Focusing Research in Career and Technical Training and Workforce Development**

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**Jack Elliot,** Texas A & M University  
**Richard M. Joerger,** Minnesota Colleges and Universities

Education and educational research is shaped by philosophy, psychology, and ever changing educational policies. Previous studies have expressed a need for relevant and focused research for agricultural education, career and technical education, workforce development education, and internationally, vocational education. A need for a relevant and timely research agenda exists for the field of career and technical education. The problem is that it is not known what these research foci should be, or if known, whether or not there is consensus within the profession. Obtaining such insight underlies the primary purpose of this study which was to gather opinions of nationally dispersed experts and identify common research topics through a consensus-building process. A mixed methodology was utilized in the study through the use of the Delphi technique (Linstone & Turoff, 2007). This method utilized a process of six iterations of instruments conducted during 2007 and 2008, using a panel of identified experts with knowledge and understanding of the issue or issues being studied. Based on the findings from this study, two models were developed to depict the National Career and Technical Education Research Agenda. The educational importance of this study is grounded in the fact that focused research in career and technical education and international vocational education will allow future planning and funding of research that can be relevant across the profession. Based upon the opinions of the expert panel, a sustained effort for research should be made by scholars in collaboration with national and international associations and organizations.

**Keywords:** workforce development; career & technical education, vocational education; training; research agenda
Reflective Writing in Study Abroad Programs: Hunting a Story in South Africa

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Universities are challenged to effectively prepare students to enter a global workforce equipped with the knowledge and communication skills to perform in an interdependent world. Short-term study abroad programs have shown the highest increase in participants, but strategic methods must be explored in order to make the most use of such little immersion time abroad. One such method is reflective writing. During a short-term study abroad course in South Africa, eight students kept reflective journals. This qualitative study used purposive sampling to gain greater insight into the thinking and meaning-making students conducted while studying abroad. Research objectives examined students’ self-awareness in the global community, changes in cultural paradigms, and desire to prescribe and become a part of solutions. Reflective writing proved to be a valuable educational tool to solidify learning and engage students in an international setting while permanently capturing student observations and emotions.

Keywords: reflective writing, study abroad, perspectives, self-awareness, experiential learning

Lessons Learned from a Camp Health Aide Safety Program for Farm Workers

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Migrant farm workers face a disproportionate risk of injury on the job. This study looked at the risks faced by citrus harvesters in Florida and developed an intervention to reduce the most common injuries by promoting the use of safety eyewear. Using two methodologies, community-based social marketing and camp health aides (CHAs), the project developed a curriculum and safety intervention that changed the behavior of migrant workers. In 2007, the intervention was evaluated for effectiveness and to better understand the factors that influenced worker acceptance of new safety technology. Citrus harvesting crews that had a CHA promoting the use of safety glasses had higher use rates and the activities of the CHA were found to influence the decision of workers. The age of citrus workers was also significant, suggesting that future interventions should develop targeted programs aimed at distinct groups. The results have significance for Extension programs that seek to improve safety of agricultural labor and also those wishing to utilize social marketing methodologies or camp health aides in innovative ways.

Keywords: social marketing, camp health aides, behavior change, farm workers, evaluation

Extension’s Role in Organizing Producer Groups: a Case Study from Orissa, India

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This paper outlines the procedures and outcomes of a new extension model in India that sought to organize producer and self-help groups within four districts in the State of Orissa. This new program activity was carried out as part of an overall decentralized, farmer-led, market-driven extension model that was pilot-tested as part of the Innovations in Technology Dissemination (ITD) component of National Agriculture Technology Project (NATP) funded by the World Bank during 1998-2005.
this new extension model sought to integrate research and extension activities in each participating district through a new Agriculture Technology Management Agency (ATMA). Second, each ATMA worked to integrate the efforts of the district extension system, local non-governmental organizations (NGOs) and farm leaders to collaborate together in forming different types of Farmer Interest Groups (FIGs) and women’s Self Help Groups (SHGs) across each district. The primary goal was to enable these farmer groups to pursue appropriate high-value crop, livestock or other enterprises that would increase farm household income. The procedures used to organize these groups are outlined in this paper. Once organized, these FIGs and SHGs became involved in the extension program planning process through the ATMA Governing Boards at the district level and Farmer Advisory Committees established at the block or subdistrict level. The purpose was to identify key problems and priorities among these different farmer groups. As a result of this new extension strategy, nearly 1,400 producer groups were organized in five years across these four project districts.

Keywords: farmer organizations, bottom-up extension, rural livelihoods

The Impact of Technologies Diffused by the Tikonko Agricultural Extension Centre (TAEC) on Farmers of the Tikonko Chiefdom in Sierra Leone

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Sierra Leone is a west African nation with about two-thirds of its population engaged in agriculture but it cannot feed itself. Agricultural activities were disrupted in Sierra Leone by a decade-long Civil War that created a great need for improved farming technologies. The Tikonko Agricultural Extension Centre (TAEC) operates in the Tikonko Chiefdom to assist local farmers in improving food production through the fabrication and repair of farm tools to be adopted and used by farmers. This study was conducted to investigate the impacts of TAEC’s technologies on farmers and their communities in the Tikonko Chiefdom. The target population consisted of 318 farmers who used TAEC’s technologies; the list of farmers was obtained from the Centre. A sample for the study (n = 74) was obtained through simple random sampling using a table of random numbers. A structured survey questionnaire was completed through one-on-one, oral interviews of farmers; 23.3% of the target population was interviewed. A majority of the farmers interviewed agreed that they readily adopted and used TAEC’s technologies. Moreover, most farmers strongly agreed that their introduction to and subsequent adoption of TAEC’s technologies had considerable impact on their farming practices and communities. The relevance of TAEC’s technologies to farmers in Tikonko Chiefdom was evident. Providing appropriate technologies that can be adopted by low income farmers stands to increase their productivity and self-reliance while improving their nations’ food security. It is undeniable that technologies contributing to food sufficiency and alleviating poverty are needed throughout much of the developing world.

Keywords: Farming; Sierra Leone; Technological Innovations
**Perceptions and Assessments of Armenian University Faculty Members Who Participated in a Professional Development Seminar in 2007**

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**Jason B. Peake**, University of Georgia  
**Dennis W. Duncan**, University of Georgia  
**Maria Navarro**, University of Georgia  
**Glen Shinn**, Texas A&M University

The Armenian State Agrarian University (ASAU) is one of the largest of the twenty state funded higher education institutions in the country. ASAU administrators have recently focused their efforts toward aligning the ASAU with the standards set forth in the Bologna Process. In 2006, ASAU partnered with the United States Department of Agriculture Foreign Agricultural Service and Texas A&M University to implement the Agricultural Education Reforms Initiative (AERI) to initiate an educational reform process and help prepare the university to be accredited by the European Union. Consequently, professional development seminars were designed and delivered to ASAU faculty by faculty members from a land-grant university in the USA. The participants attended a seven–day professional development seminar on teaching and learning methods in April 2007. When questioned about the change of quality of education in Armenia since 1991, the participants’ answers varied from “much worse” (22.2%) to “somewhat improved” (72.2%). Faculty members were optimistic about the future of agricultural education in Armenia; over 50% indicated that they thought that agricultural education would improve during the next five years. Topics that the participants indicated held the greatest importance to their professional development included “Utilizing the Problem-Solving Method of Teaching and Learning,” and “Characteristics of Effective Teachers.” Participants also believed they held the highest ability to implement principles related to the following topics: “Utilizing the Problem-Solving Method of Teaching and Learning”, and “Contextual Learning”. This study provides data that will be helpful for providers of future collaborative professional development to provide effective programming.

**Keywords:** Armenia, Faculty Development, Bologna Process

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**Identify Key Components and their Value in Development of an Effective Chinese Business by United States Agricultural Companies: A Delphi Study**

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**B. Allen Talbert**, Purdue University  
**Mark Russell**, Purdue University

The purpose of this study was to identify key components and their importance in development of an effective China business by U.S. agricultural companies. This study utilized the Delphi techniques and three rounds were conducted. A group of 37 professionals completed the first round with 34 of the original 37 professionals completing the second and third rounds. The panel generated 63 key components that U.S. agricultural companies should consider when entering the Chinese market. Of the 63 key components, the panel rated 11 to be essential, 44 to be very important, and eight to be moderately important. Furthermore, the 63 key components were grouped into nine groups: ethics and trust, language and culture, Chinese market, political and economic climate in China, product advantages and customer service, human resource and labor, networks and partnerships in China, Chinese business practices, and legal counsel and intellectual property in China. The value of the ethics and trust group is greater (p<0.05) than the other eight groups with the ethics and trust group considered to be essential, while the other eight groups were considered very important. In conclusion, the key components generated in this study were all important and have significant value and therefore should be included in an educational training program targeted at U.S. agricultural companies wishing to successfully develop a China business.

**Keywords:** Key component, Value, Educational program, Business development, China
An Exploratory Investigation of the Influence of Donated English-language Books Upon the Reading Fluency Scores of Students From Rural Tanzania

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An enormous shortage of text and library books exists throughout Africa. Accordingly, millions of donated text and library books have been shipped by a number of non-profit organizations over the past 20 years to Africa through funding provided by public, private, and government organizations. While some research shows that books increase student literacy rates, inconclusive data is available regarding the impact of donated English-language textbooks upon student achievement. This study examined the influence of donated English-language text and library books from the United States upon Tanzanian tenth grade student reading fluency scores. A mixed methods research model was used in a comparative case study in four schools in the Dodoma/Singida region of Central Tanzania, East Africa. Results showed students experienced increased English-language reading fluency scores when provided with books. In addition, the interview data revealed that teachers and administrators believed donated English-language books did not do cultural harm and served to improve student educational capacity. It was concluded that while this was an initial study, the findings may serve as one source of information to justify book donation programs in the developing world and that additional research with other students from Tanzania and other developing countries is warranted.

Keywords: Africa, education, development, literacy, reading

Using Group Facilitation Skills to Provide Training for Extension Modernization

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Tom Cadwallader, University of Wisconsin Extension
Arlen Albrecht, University of Wisconsin Extension

Modernizing an extension service means more than incorporating in new technologies in the distribution of information and educational programs. Extension services are often faced with the challenge of serving a wider array of client and community needs as they struggle to balance local resources with global demands for both raw commodities and niche products while they are under increasing pressure to downsize. An effective modern extension service needs access to the latest research information and educational technologies but those resources are of little value if they don’t meet the unique needs of the people and communities they serve. A modern extension service must also be skilled in human development and group process skills that uncover the unique needs for those they serve and build the capacity within them to sustainably meet their needs. This paper describes how a team of faculty members from the University of Wisconsin Cooperative Extension Service engaged the Guyana Ministry of Agriculture Extension Service in successfully incorporating those capacity building skills in their modernization effort though a combination of formal workshops and modeling group process skills in two agricultural communities.

Keywords: Facilitation skills, extension exchange programs, Group process skills,

A Brain–Based, Experiential Learning Framework to Guide International Experiences

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B. Lynn Jones, Iowa State University

The purpose of this article is to create a theoretically–based experiential framework for international experiences based on cognitive science. Such a framework will help agricultural and extension educators
facilitate learning activities before, during, and after an international experience that have positive cognitive and affective impacts on students. The framework was developed through content analysis and synthesis of learning theory and cognitive science literature. It was concluded that cognitive science and contemporary learning theory provide a solid framework to help agricultural and extension educators facilitate learning before, during, and after an international experience. A model was developed to guide educators through this process. Before an experience, it was concluded that educators should focus on prereflection. The authors also concluded that during an experience educators should implement activities for learner reflection. Finally, it was concluded that after an international experience educators should also facilitate reflection activities.

**Keywords:** cognitive science; experiential learning; international experiences; reflection;

**A Case Study on Utilizing Cacao-based Agroforestry Systems to Replace Low Productivity Crops on Hillsides in Honduras**

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Aroldo Dubon, Honduran Agricultural Research Foundation
Don Breazeale, Honduran Agricultural Research Foundation

The purpose of this paper was to describe the methodology followed by the Honduran Agricultural Research Foundation (FHIA) when implementing an income generating project that improved the quality of life of 445 poor, rural producers (including 95 women) of the hillside and piedmont areas of the Honduran north coast and at the same time protected and maintained the natural resource base of the area. As a result of these programming efforts, a total of 2,450 rural family members now have increased their yearly incomes from an average of $400 / hectare to approximately US$2,500 per hectare utilizing perennial crops alone. Through the introduction of new cacao plantings coupled with other high-value commodities such as plantains, tropical fruits and fast-growing tropical woods, the risks inherent in hillside farming were spread out over more enterprises. These new plantings in most cases only took up about one-half of the land area for a family; therefore, they still had ample room to produce their own basic commodities for home consumption. In addition, thorough the introduction of high-value perennial crops and the removal or restriction of grazing to more appropriate areas, producers had very little need to continue using slash and burn practices. Finally, the improved environmental conditions on their lands have greatly reduced rain-caused erosion, improved air and water quality, protected remaining forests and provided for reforestation efforts. Important lessons learned were also described in order that other organizations might be able to replicate these positive results.

**Keywords:** cacao, agroforestry, deforestation, income generation, sustainability

**Post-Conflict Agricultural Development: Lessons Learned in Eight Provinces in Iraq**

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Applications of rapid rural appraisal and needs assessment strategies in a post-conflict environment in central Iraq are the foci of this paper. The project objectives evolved into a systems approach using qualitative and quantitative methods to improve agricultural practice, extension and training, community development, security, and policies for governance. The design called for a case study and a description of pre-deployment activities of an assessment team, initial organization and adjustments, and techniques for internal and external communication. Particular attention was given to agricultural specialties, crosscutting constructs, and data collection and analysis protocols in eight provinces in Iraq from May-December, 2008. Findings focus on 13 agricultural specialties: agricultural business, agricultural economics and market development, agricultural engineering and farm machinery, aquaculture, crop
production and management, extension education, higher agricultural education and vocational-technical education, horticulture and cold chain, livestock production and animal health, organizational management and leadership, soil fertility and reclamation, water and irrigation systems, and youth development. The protocol identified 11 crosscutting constructs: cooperation, economic competitiveness, education and training, environmental stewardship, future view, governance, health and wellness, land tenure, receptivity to change, security, and sustainability. We concluded that engagement is essential; process is important—more important than one may think!; and reflection is not simply additive; it is exponential and synergistic. Nine lessons learned have implication for best development practice. Practical implications point to strategies that transform from kinetic action to development practice. The experience describes critical roles of agricultural and extension education as a conduit from conflict to a civil society.

**Keywords:** agricultural development; education, extension; post conflict; rapid rural appraisal, assessment, smallholder farmer

**Post-War Education of Small Ruminant Farmers of the Bekaa Valley, Lebanon**

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Lebanon is an ancient, Middle Eastern country bordered by the Mediterranean Sea, Israel, and Syria. The Bekaa Valley of Lebanon is mountainous and suited to small ruminant production. The 2006 war between Lebanon and Israel left small ruminant producers of the Bekaa Valley in a difficult economic situation. The United States Agency for International Development (USAID) as part of an aid package to Lebanon, provided technical and financial assistance to livestock producers in the Bekaa Valley. The Bekaa Valley was chosen because this area is a stronghold of the Hezbollah organization and was subsequently heavily bombed by Israel. During the years of 2007 and 2008, the author was recruited by USAID to provide technical assistance, in partnership with Lebanese agricultural specialists, specifically to small ruminant producers of the Bekaa Valley and southern regions of Lebanon. The major objectives of this assignment were two-fold: (1) to assess weaknesses and strengths related to the small ruminant milk supply chain; and (2) provide hands-on targeted technical assistance based on these evaluations, primarily at the producer level, on flock management, animal health, and improved milk production and quality. As result of this assignment over 250 producers received technical assistance on a number of issues in the form of either individual consultations or workshops. Weaknesses in the dairy supply chain such as low milk prices and poor disease management were identified. Castration was also introduced as a tool for managing market sheep and goats.

**Keywords:** Small ruminants, dairy, war, education, development

**Factors Affecting the Global Mindedness of Extension Agents: Implications for Building Global Awareness of Extension Agents**

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**K.S.U. Jayaratne**, North Carolina State University  
**Mark Kistler**, North Carolina State University  
**David Smith**, North Carolina State University

Because of the profound effect that globalization has on our society the Cooperative Extension Service of the United States has been challenged to develop programs that help people deal with these changes. The purpose of this study was to determine the level of global mindedness among Extension agents in North Carolina and to identify the factors affecting their global mindedness. This study found that the typical Extension agent from North Carolina has a moderate to high level of global mindedness on this scale.
This study found that the level of Extension agents’ global mindedness varies with their age, levels of education, gender and programming area of job responsibility. This study revealed that Extension agents with international experience have a higher level of global mindedness and the agents who have participated in programs such as the Peace Corps and study abroad were more globally minded. This study found a weak positive relationship between the length of time Extension agents have spent abroad and their global mindedness. This study is significant because it describes how to determine the global mindedness of Extension agents and identify the factors affecting their global mindedness.

**Keywords:** Extension globalization, international experience, global mindedness, professional development

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**Motivations and Reasons for Participation: Professional Development Study-Tour to Mexico**

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**B. Allen Talbert,** Purdue University  
**Janet S. Ayres,** Purdue University  
**Mark A. Balschweid,** University of Nebraska  
**Susan Tharp,** Purdue University

In late February and early March of 2007 a group of Purdue University Cooperative Extension Service Educators and community partners from counties across Indiana participated in a nine-day cultural immersion trip to Mexico titled “Experience: The Culture of Mexico.” Through the collection of data from qualitative interviews, the study aimed to identify the role that a short-term international immersion experience could play as a professional development tool. This paper looked at what participants identified as the motivations and reasons they chose to participate. The findings identified that many participants shared motivations for choosing to participate. Seven motivational themes emerged. It is recommended that participant motivations be used to guide the program planning process for international experience programs. It is suggested that participant motivations be a tool for selecting whether the participant attends the program.

**Keywords:** international extension, andragogy, professional development

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**Developing a Collaborative Evaluation Toolkit to Work with Extension Audiences: Economic Development and Carteret Catch**

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**John M. O’Sullivan,** North Carolina A & T State University

This project used collaborative evaluation techniques to develop a model for delivering technical assistance to small-scale enterprises in North Carolina. Collaborative evaluation engages key stakeholders at all stages of the evaluation process to enhance their capacity to make data driven decisions. It has been successfully applied to a variety of programs, spanning education, social services, government, and agriculture. The project applied this evaluation approach to meet the marketing evaluation needs of an emerging Eastern North Carolina Local Seafood Promotion Organization, “Carteret Catch.” During the project, three surveys were developed and conducted to assess interest in locally caught seafood among consumers, restaurants, and retailers. The surveys and the methodologies to gather the information emerged in the course of the project through consultation with stakeholders. From this project it is proposed that an evaluation toolkit be developed, with a mind to developing a model that could serve as the basis for a curriculum to promote economic development for extension programs to serve other small-scale enterprises in the state.

**Keywords:** evaluation, survey development, marketing surveys
Impacts of Sustainable Agriculture Research and Education Grant Program:  
Case of North Central Region SARE Program

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Accelerating global trends make it increasingly clear that agriculture must become more sustainable to support human survival. The USDA’s Sustainable Agriculture Research and Education (SARE) program has for two decades provided grants to increase agricultural sustainability. This paper summarizes survey methodology and results for SARE grant recipients, farmers and ranchers involved in the North Central Region’s (NCR) SARE major granting program between 1988 and 2004. Seeking to determine quantifiable impacts of grant-funded projects, results explore: who was involved in conducting the projects; impacts articulated by project leaders and farmer/rancher participants; project spin-offs; instructional materials developed and how information was disseminated; how and to what extent other farmers and ranchers were reached with project results; levels of satisfaction with SARE management practices; changes that project leaders suggest for NCR-SARE.

Keywords: sustainable agriculture, research education grant program, impacts

Indian Country and County Extension:  
A Comparison of Programs in the University of Arizona Cooperative Extension System

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In the United States, extension service to states and counties manifests a century long tradition where clientele and communities comprehend the role of extension and support it culturally and economically. In contrast, extension on U.S. American Indian Reservations has often been erratic or even nonexistent. Although scientific research comparing Indian Country Extension and County Extension is scarce, anecdotal evidence suggests that there may be significant differences in how a program must be prepared and presented in order for it to be successful and accepted and by an American Indian audience. A qualitative study conducted on five Indian Reservations within the Arizona/New Mexico region looks at distinct cultural, historical, and geographic characteristics, including differences in tradition and culture, learning styles, health, and politics. Each of these characteristics and differences may influence the acceptance and success of traditional extension programming efforts on U.S. American Indian reservations.

Keywords: Indian country extension, county extension, cultural learning styles
Internationalizing University of Florida IFAS Extension - Developing and Implementing an Innovative Horticulture Extension Program in Costa Rica

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University of Florida Extension and EARTH University faculty developed and delivered their first training program for landscape management in Costa Rica. EARTH University’s new LaFlor Campus near the Pacific coast area is similar to Florida in that the region is experiencing rapid growth in tourism development. Stresses of growth, decreased water quality and quantity, and misuse of horticultural chemicals impact the local economy and environment. Extension faculty sought to provide informal training for landscapers, ornamental producers and homeowners. Two concurrent seven-week multidisciplinary educational programs were presented in early 2008. Seven county Extension faculty each spent two weeks at LaFlor preparing and presenting the two concurrent training tracks. Faculty rotated in and out each week for program continuity, developed course materials, and taught lessons in Spanish. The “Master of Gardens” track was designed for nursery and landscape professionals. A “Gardeners of Costa Rica” tract focused on homeowners and ecotourism personnel. Curriculum was similar to University of Florida IFAS Extension Master Gardener programs. Participants learned about best management horticulture practices suitable to dryland tropics, then practiced concepts with hands-on exercises including the installation of demonstration gardens. After seven weeks a graduation ceremony was held and 47 participants received completion certificates. Pre/post test data indicate improved test scores of up to 61 points on concepts taught. Follow-up activities including enhancement of a website are ongoing. Materials developed will be used for Florida Spanish-speaking audiences. The programs also provided an international experience for faculty to broaden their knowledge of different environments and cultures.

Keywords: Extension, Horticulture, Partnerships

A Case Study of Capacity Building: Adapting and Applying E-Learning in Afghanistan

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The purpose of this case study is to share how e-learning is being used as a capacity building tool in Afghanistan through the PEACE Project, short for Pastoral Engagement, Adaptation and Capacity Enhancement (http://www.afghanpeace.org) (USAID, 2006). The PEACE Project is building capacity through the use of new technologies within its broader objective of helping Afghanistan to improve livestock production and manage its rangelands. The infrastructure and support provided by the government’s initiatives has provided an ideal setting for the PEACE project to collaborate with Afghanistan’s universities and government institutions to build capacity. The case study reveals characteristics and qualities of Afghans that were considered when adapting and applying e-learning as a medium for delivering training on Near Infrared Spectroscopy (NIRS) technology to analyze livestock fecal samples. The authors strive to raise awareness regarding the setting in which e-learning is being used to build capacity and share techniques that were implemented to encourage success. Detailed
descriptions of how interactivity and supporting materials were interlaced to enhance the educational experience are included.

**Keywords:** capacity building, e-learning, training, NIRS, Afghanistan

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**A Comparison of Small Scale Farming in Barbados, Dominica, and Trinidad and Tobago**

**Anita Závodská,** Barry University  
**David Dolly,** University of the West Indies

In this paper, the authors compare current small scale farming systems among three Caribbean nations - Barbados, Dominica, and Trinidad and Tobago. They then address the Extension education challenge in the future. Small scale farming is an established concept among food production systems throughout the developing world in which the production system is a mix of food crops and sometimes small livestock. The small scale producer in these islands must meet expectations in a changing agrarian environment of reduced Gross Domestic Product from agriculture, yet the small scale producer is still a resilient member of the food production system. Small scale operations are more practical and experience varying levels of efficiencies given local conditions and constraints. The purpose of this study was to investigate the relationship between small scale producers and the agricultural sector in the nations under study while the said producers maintain economic and social independence. Given the trends in Extension systems for developing countries, the authors conclude that the state must still play a role in financing the Extension systems for small producers. Given current advocacy to multi-faceted extension systems, the authors recommend the use of appropriate system options for the small scale farmer with support from the state.

**Keywords:** small scale farming, Barbados, Dominica, Trinidad and Tobago, multiple approaches
Association for International Agricultural and Extension Education
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AIAEE Award Winners for 2009

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The Editor requested board members to review and nominate articles published in Volume 15 (2008) for the seventh annual Article of the Year Award. The nomination period occurred in March 2009. Criteria for article selection and nomination were the article’s capacity for “enhancing the research and knowledge base of agricultural and extension education worldwide…”

James Lindner and Kim Dooley, Co-Editors, conducted a survey of board members, asking them to review and rank the overall excellence of each article. Following are the results of this evaluation. Congratulations to all the authors on their scholarly achievements.

**Outstanding Journal Article of the Year for 2008**


**Runner-Up Journal Articles of the Year for 2008**


Call of Managing Editor-Elect – *Journal of International Agricultural Extension Education*

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Manuscript Submission Guidelines

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All manuscripts must indicate the type of article—Feature; Commentary; Tools of the Profession; Book Review—on the title page of the manuscript. All manuscripts must be submitted online at http://www.aiaee.org/submit.aspx. Manuscripts cannot be published or be under consideration for publication in another journal.

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Book Review

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