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An Analysis of the Impact of Feeding and Management Systems of Cattle on Consumer Buying Habits in Costa Rica

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Introduction

One of the indispensable resources to the survival of the human race has become a social concern; food is no longer considered an infinite resource. Over the next few decades the world’s population will be faced with the fact that the demand for food will outweigh supply. In developing countries this need is more remarkable, and the growing population will only exacerbate this situation.

From a global perspective, one of every seven people does not have access to sufficient protein and energy and even more suffer from some micronutrient malnourishment (Godfray et al, 2010). Furthermore, it is expected in the near future, the demand for meat products in the developed world will remain relatively stable while in the developing world, the demand is expected to rise quite drastically. This is partially attributable to the rise in population, as well as to the increase in affluence in many countries (Speedy, 2003).

Purpose and Objectives

Understanding consumers’ preferences will enable producers to optimize the use of natural resources and transform current production methods into a more sustainable model. Lancaster’s Consumer Demand theory argues that consumers derive utility not from goods directly but from the want-satisfying attributes of goods (Lancaster, 1979). It states a product can
be described in terms of a multidimensional attributes profile, and consumers’ choice behavior reflects their preferences and overall judgment regarding that set of profiles.

In the past few decades, Costa Rica (CR) has experienced a shift in its productivity structure toward the tertiary sector (services), leaving only 3.5% of the human resources of the Great Metropolitan Area dedicated to agriculture (Universidad de Costa Rica, 2014). Understanding this phenomenon, the researcher’s goal was to explain and describe consumers’ preferences in CR regarding cattle feeding and management systems, and identify opportunities to open new markets for cattle producers.

Methods

The research tools utilized for this investigation were two researchers-develop instruments. The minimum number of participants for this survey research project was 208 people, which was determined by using the method established by Johnson and Orme (1996). The first instrument contained 13 questions in a Likert-type scale with the objective of identifying which attributes were more desirable to the consumers. Using a second instrument, the researcher employed the Conjoint Analysis (CA) method which utilized randomized instrument items based on the four top attributes determined during the first data collection.

Results

The results of the CA identified the most desirable attributes regarding cattle feeding and management systems and the consumers’ willingness to pay for these desirable characteristics. These attributes included animal welfare, grass-fed, value added and price. A niche market was identified for these differentiated products that not only optimize natural resources but also provide producers a better economic return, thus contributing to their standard of living.

Recommendations

Market information should be made accessible and easy to understand by agricultural leaders for producers in order to reduce food losses and increase their economic viability. This study should be replicated in other developing countries to improve opportunities for cattle producers.

References

Analysis of the Effectiveness of Water Quality Education and Public Outreach in an Effort to Decrease Waterborne Illness in Gondar, Ethiopia, Africa

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Introduction

According to water.org, “The need for water and sanitation in Ethiopia is severe. Just under half of the population has access to an improved water supply, and only 21 percent of the population has access to adequate sanitation services.” Tarleton State University has focused its water quality, sanitation, and hygiene education efforts on the city of Gondar in the Amhara region of Ethiopia, Africa.

Methodology

In the past three years, Tarleton State University has sent a faculty and staff personnel and a total of five Tarleton students to the annual Jewish Voice Ministries International (JVMI) Health Clinic to educate Gondar locals on the importance of water quality, sanitation, hygiene. In 2012, a Tarleton State graduate student completed a research project over data collected at that year’s clinic. Results from this clinic determined that out of 1,020 patients over 59.8 percent were diagnosed with intestinal parasites. (Brown, 2012) From this data, Tarleton State representatives determined that distribution of Lifestraw water filtration devices, in collaboration with education of water quality, sanitation and hygiene, would reduce the incidence of waterborne illness in the population of patients at the annual Gondar clinic. A Lifestraw device is a water filter designed to be used by one person to filter water. A personal Lifestraw device removes 99.999 percent of waterborne bacteria and 99.9 percent of parasites. (Edrick, 2013) In 2013, three Tarleton students distributed over 2,500 Lifestraw water filtration devices and education of use to Gondar locals. Each Lifestraw device was labeled with a tracking number and patient cards were collected from each person who received a Lifestraw. Sex, age, and diagnosis of each patient were collected to determine the incidence of water related illness. In October of 2014, five Tarleton State students and a Tarleton State faculty member will return to the annual JVMI clinic in Gondar, Ethiopia and provide education on water quality, sanitation and hygiene and distribute new personal Lifestraw devices. In addition to distribution of Lifestraw devices, patient data will be collected and data will be analyzed and compared to 2013 collection of data using Statistical Product and Service Solutions (SPSS).
Results
Data from 2014 will be analyzed in comparison to data collected in 2013 to determine the incidence of waterborne illness after the distribution of Lifestraw devices. As data has not yet been collected for 2014, results will be tabulated after the fall 2014 trip to Gondar, Ethiopia.

Cost and Resources
The cost includes: Roundtrip airfare to Addis Ababa, Ethiopia and roundtrip airfare from Addis Ababa, Ethiopia to Gondar, Ethiopia and back. The land package for the 10 day trip is approximately $1700 for room and board. Lifestraws are donated by the company that makes them and JVMI.

References
Assessment of Training Needs of Extension Officers in the Use of Information Communication Technologies in North West Province, South Africa: Use of Borich Needs Model

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Keywords: Digital gap, extension officer, ICT competence, ICT importance, training need

Borich Needs Model was used to determine training needs among extension officers on the use of Information Communication Technologies (ICTs) in North West Province South Africa. This was predicated on the fact that central to the development of agriculture which is the mainstay of most African countries and livelihoods of many is the issue of Information and Communication Technology which promote and distribute new and existing farming information and knowledge within the agricultural sector for facilitating agricultural and rural development and bringing about social and economic changes. Simple random sampling technique was used to select 169 extension officers from 228 in the province. Frame error was controlled by excluding administrative and support staff, while selection error was eliminated by ensuring that all frontline extension (field) officers were contacted for the study. Data were collected using a structured and face-validated questionnaire containing 20 ICT tools for which extension officers indicated competencies and importance. The questionnaire had an overall reliability coefficient of .90 using split-half technique. Non response error was controlled through call backs and follow. Training needs on use of ICT were analysed and ranked using weighted mean discrepancy score (MWDS). Many studies used the Borich (1980) needs assessment model to identify in-service or training needs existed by calculating mean weighted discrepancy scores (MWDS) (Adel, Elhamoly, Koledoye & Kamel, 2014, Alibaygi & Zarafshani, 2008; Christensen, Warnick, Spielmaker, Tarpley, & Straquadine 2009). The versatility of the model allows modification and expansion. A discrepancy score (DS) was calculated for each individual on each competency by taking the importance rating minus the ability (competency) rating. A weighted discrepancy score (WDS) was then calculated for each individual for each of the ICT tools by multiplying the discrepancy score by the mean importance rating. A MWDS for competence in the use of each ICT tool was calculated by taking the sum of the weighted discrepancy scores and dividing by the number of observations.

The results show that the mean weighted discrepancy scores (MWDS) show the training needs in the use of ICT tools by extension officers. The higher the MWDS, the greater the training need for the use of ICT tools. The highest ranking training needs were computer (6.75), World Wide Web (5.85), overhead projector (4.35), internet (5.35), personal email (3.23), Organisation e mail (5.00) and Organisation website (5.20). Based on the findings, it is important that these specific ICT tools identified with high MWDS should be prioritised for training other than the provision of generalised training for extension officers in the study area.
References


Introduction

Extension played a crucial role in increasing agricultural productivity and transmission of new technologies (Ferroni & Zhou, 2012). However, Extension workers as an information source is very limited (5.8%) due to inadequate funding and unmotivated educators (Adhiguru, Birthal, & Kumar, 2009; Anderson, 2007). In public sector Extension, the evaluation and accountability of various Extension programs is scarce (Ferroni & Zhou, 2012).

Social Network Analysis (SNA) is a methodology which provides complementary visual and statistical components for analyzing the traits of actors and their relationships in a network and is very promising for Extension professionals to understand Extension’s reach (Bartholomay, Chazdon, Marczak & Walker, 2011; Springer & De Steiguer, 2011).

The overall purpose of this study was to explore the awareness and interests of Extension and research faculty toward SNA for effective Extension and research work.

Methodology

This study used a descriptive, cross sectional survey design. The target population consisted of all faculty (N=28) in the three social science departments at University of Agricultural Sciences, Bangalore, India.

A four-section instrument was developed to collect data: views of faculty on SNA (7 statements), barriers to using SNA (10 statements), strategies for promoting SNA in Extension (8 statements) that were measured on a five-point Likert scale (strongly disagree to strongly agree) and demographic information.

Face and content validity of the instrument was established by a panel of Extension and research faculty. A post-hoc Cronbach’s alpha for the first three sections were in the acceptable range (low of .70 to a high of .93). The study was approved by the Institutional Review Board of the Penn State University.
Dillman’s total design method was used to collect data (Dillman, 2000) with an initial pre-notification e-mail sent to all 28 faculty. Reminder e-mails and personal contacts yielded a response of 32.1 percent. Descriptive statistics were used to summarize the data.

**Results**

All of the respondents were male and reported 19.33 years of work experience. Faculty either ‘agreed’ or ‘strongly agreed’ that: SNA should be taught at graduate level ($M = 4.57$, $SD = 0.53$); and SNA is important in understanding the reach of Extension ($M = 4.29$, $SD = 0.49$).

Major barriers to using SNA were: lack of expertise ($M = 4.33$, $SD = 0.50$); and lack of administrative support ($M = 4.22$, $SD = 0.67$). Faculty “agreed” that the strategies such as increased funding ($M = 4.67$, $SD = 0.50$); expert training in SNA ($M = 4.67$, $SD = 0.50$); will promote SNA.

**Conclusions**

Faculty view SNA as very important and required for understanding the reach of Extension. But they also agree that SNA is not utilized due to lack of expertise and, administrative support, and lack of courses in SNA in agricultural extension curriculum.

**Recommendations and Implications**

SNA complements understanding the reach of Extension. Therefore, efforts should be made to train more experts in SNA. Need exists to create awareness about its use and importance for assessing impact of Extension programs.

Agricultural universities in India should design a graduate level course on SNA and collaborate with U.S. universities via workshops, training or short faculty/student exchange programs to gain knowledge and expertise in using SNA.

**References**


Case Study: Zamorano Students’ Internship Experience and Resulting Influence on Career Paths

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Keywords: Agriculture, career path, case study, internship, Latin America

Introduction
Internships have become a popular way to expose students to real world agricultural situations (Jones, Wu, & Hargrove, 2002). Zamorano University, located in [Latin American country], is one of the leading agricultural universities in Latin America, with an enrollment of 1267 students from 20 different countries (Zamorano University, 2014). The academic program requires students to participate in a 15-week internship. In the spring of 2012, one student was brought to [U.S University] as an intern. Afterwards, an official internship program with Zamorano University was created as an outreach program from Texas Tech University with the goal of improving food safety and education (Jurek, 2013). This study sought to evaluate the experiences of students who participated in an internship at Texas Tech University from Zamorano University and the impact on the students’ professional career pathway.

Research Methodology
A qualitative case study was conducted with Zamorano students who participated in an internship program at Texas Tech University during the spring semesters of 2012 and 2013 (N = 8). The bounded system of the case study consisted of a convenience sample of students willing to participate. Data was collected through face-to-face and video conference interviews according to the participants’ geographic location. Interviews were recorded and then transcribed for analysis within and between participants. Visual documents that participants voluntarily offered such as photographs during the internship, letter of intent, progress reports, GPA score and TOEFL scores were used as part of the analysis. Interviews were conducted,
transcribed and open-coded in Spanish. Afterwards, the open-coding with supportive quotes was translated into English.

**Results**

The internship program had a positive impact on the participants’ career path. The following themes emerged: cultural shock, language barriers, graduate school, and work experience. Participants who chose to enter the workforce used the internship experience as an added value to their curriculum for job applications in their field. Other participants used the internship experience as a tool to apply to graduate school. Their chosen career path was influenced by their exposure to a graduate level environment including research, graduate student and faculty interaction, and class survey. Interns mentioned cultural shock and adaptation to the culture as an initial limitation including language barriers, but highlighted the positive impact the internship had on their cultural awareness and language proficiency by interacting with different cultures on a daily basis.

**Conclusions/Implications**

The internship program is an opportunity for career path orientation. It provides a job experience and a graduate school environment exposure to the interns. This experience strengthened their ability to decide near future career paths. Additionally, an internship abroad provided students the opportunity to improve their cultural fluency by exposing them to a different culture. This is considered an additional outcome to their internship experience.

**Recommendations**

It is recommended to continue the internship program and follow up with participants to evaluate the impact on their lives, and find ways to continually improve the program in order to provide a high quality experience.

**References**


A Content Analysis Using Google News Alerts about Incidents of Snakebite in Tropical Countries

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Keywords: Google news alerts, snakebite, snakebite prevention, snakebite envenoming, mass media campaign

Introduction
In tropical and subtropical countries, snakebite envenoming is a public health hazard. Injury, disability, and death due to snakebite are a daily occurrence in many parts of Africa, Asia, and Latin America (Williams et al., 2010). An estimated five million bites each year result in approximately 400,000 amputations, and between 20,000 and 125,000 deaths worldwide (Williams et al., 2010). In tropical countries, snakebite is largely an occupational disease for agricultural workers, which can affect food production (Warrell, 2010). India has higher snakebite mortality than any other country (Warrell, 2010).

Conceptual Framework
Diffusion is the process by which an innovation is communicated through channels over time to members of a social system (Rogers, 2003). Mass media channels are usually the most efficient and rapid means of informing an audience about the existence of an innovation (Rogers, 2003). Collecting information about snakes’ habits and seasonal activities is essential to planning community education to reduce the risk of encounters between people and dangerous snakes (Warrell, 2010). Use of Google News Alerts about snakebite incidents will build an understanding of media reporting on the topic and may provide insights for developing a mass media campaign about snakebite prevention.

Methods
Content analysis allows researchers to learn about human behavior in an indirect way, through an analysis of their communications (Fraenkel, Wallen & Hyun, 2012). A content analysis of Google News Alerts about snakebite incidents was conducted between July 1 and August 31, 2014. The key word “snakebite” was used as a filter mechanism. Reports were culled...
to include only those originating from media outlets in India and Nepal, and only for incidents occurring within the confines of those two countries.

**Results**
The analysis yielded reports of 29 fatalities and 66 injuries due to envenomation in the countries of India and Nepal. Of the victims, 14 were sleeping and six were engaged in farming or other outdoor labors when bitten. Some media alerts did not provide specifics about the victim’s activities.

**Conclusions/Implications**
The data from our study provides information about the circumstances surrounding some victims’ encounters with snakes, and offers clues about snakes’ habits that could be used in a mass media campaign to reduce risk of snakebite. A mass media campaign has the potential to increase knowledge, and improve attitudes and behaviors. An important step is to identify variables about snakebites that would impede or facilitate mass media campaigns (Bettinghaus, 1986). Messages should stress the efficacy of taking risk-reducing steps (McGuire, 1984).

**Recommendations for Research**
Future research should incorporate a wider analysis of information received through Google News Alerts about snakebite incidents. The alerts to be documented should be limited to those about snakebite that originate from media outlets in India and Nepal during the six-month rainy season from April to October, when most snakebites occur. At the conclusion of the six-month period, the alerts would be analyzed for trends that may lead to a better understanding of snakes’ habits.

**References**
Determining Content for a Distance-Delivered Graduate Certificate in Global Food Security: A Delphi Study

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Keywords: Global food security, Delphi, experts, education, international, agriculture

Introduction
Global Food Security (GFS) is a major issue and will continue to expand in years to come. The Food and Agriculture Organization of the United Nations (FAO) estimates almost 870 million people suffered from chronic hunger globally in 2010-2012 (FAO, 2012). Lack of education related to food security in tropical regions of the world has become a major problem. Existing technologies and best practices need to be disseminated and the only manner to do so is with educational interventions (Godfray et al. 2010).

Education is important for achieving food security (Gasperini, 2000). Curriculum focused on teaching GFS to international graduate students according to their necessities will enable students in international settings to more readily engage in leadership positions within organizations and disciplines related to food security.

Purpose of the Research
The purpose of this research was to determine the topics and courses Latin American’s stakeholders believed should be included in a distance-delivered graduate certificate focusing on GFS made available to students in Latin America.
Methods

The Delphi technique aids in the determination of consensus within a group of experts on a specific topic. This allows researchers to obtain an expert, group opinion in a systematic way (Sackman, 1975).

A three-round Delphi study was performed with 18 international experts who agreed to participate. Experts represented Latin American universities as well as various components of the food industry. In round one, panel members were asked via email to answer a single question about which course topics should be included in a distance-delivered graduate certificate in GFS. Based on the responses from the question in round one, a Likert-type instrument was developed. Consensus for inclusion was considered to be reached when at least 75% of the panel indicated ‘agree’ or ‘strongly agree’ on the 4-point scale (Akers, Vaughn & Lockaby, 2001). If less than 75% agreement was reached on any single item, the topic was discharged. In the final round, topics were grouped by the researchers into courses according standard criteria. The course list was randomized and returned to the panel with the request to score the courses on a Likert-type scale for importance of inclusion in the curriculum with 1 = not important and 10 = essential.

Results

The result of this research was a list of courses encapsulating key ideas about GFS for which there was consensus and which was considered to be an essential component of a graduate GFS certificate. Of the 91 originally-identified topics, 37 were eliminated due to lack of consensus by the panel. The remaining items were grouped into 23 courses. The highest rated courses included: Program Planning and Evaluation, Human Nutrition, Introduction of GFS, Food Security Policy, Food Safety, and Effects of Climate Change.

Conclusions and Recommendations

The resulting courses would be appropriate for developing a curriculum for a distance-delivered graduate certificate in GFS directed toward students in Latin America. Development and delivery of this multidisciplinary program will require the right faculty and support from administration to provide the resources to teach the classes.

References


Factors Affecting Adoption of Improved Rice Varieties and Its Impact on Farm Income:
Evidence from Nepal

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Keywords: technology adoption, improved rice varieties, farm income, food security, South Asia, Nepal

Abstract
The use of improved, high yielding crop varieties by rural farm households remains an option to reduce poverty, hunger and food insecurity in developing world. However, many smallholders in developing countries have not been able to use improved crop varieties. The sizable proportion of Nepalese farmers is still using traditional, low yielding rice varieties. Rice is, by far, the most important staple crop of Nepal grown under 35 % of the total cultivated area. However, Nepal’s rice productivity is amongst the lowest in the South Asian region. This study aims to determine the key factors that influence the adoption of IRVs and their impacts on farm income among rural farm households in Central Nepal.

The data for this study were obtained from a survey conducted in Central Nepal during 2013 crop season. We used a multistage random sampling technique to select the sample. At the first stage, four districts namely Kavre, Nuwakot, Chitwan and Rautahat were purposively selected. At the second stage, 8 villages (two villages from each district) were selected. At the third stage, a total of 416 households were drawn randomly from the selected villages. A farm household is assumed to maximize its utility function subject to resource constraints. Thus, the adoption decision was modeled in a random utility framework. We employed a Heckman sample selection model to analyze the data.

The results revealed that household characteristics such as age, education and family labor played a significant role in adoption decisions. Additionally, farm size, land type, bullocks and wealth index influenced farmers’ decisions to adopt IRVs positively. Extension service and access to seed showed positive influence farmers’ decisions to adopt IRVs. Further, adoption decision appeared to be substantially influenced by yield potential and consumers’ acceptability of the grains in the market. From the second stage analysis, we found that education, family labor, farm size and wealth index showed positive and statistically significant impact on farm
income. More importantly, farm households who adopted IRVs were likely to have higher farm income particularly in Terai region. In contrast, off-farm work and distance to market had negative and statistically significant impact on farm income, suggesting that households located nearby market and involved in off-farm activities tend to have lower farm income than their counterpart households located further away from market.

Given the significant role played by extension-related variables, investment in extension should be encouraged. Educating farmers by formal or informal (e.g. adult learning) ways to enable them benefit from research and extension materials will increase the probability of adoption. Additionally, set up of result/output demonstration sites for IRVs in farmers’ field to show the yield difference between improved varieties and the local ones and promote farmers-to-farmers extension can be a viable way to increase adoption rate, production and food security in the long run.

References


Farmers’ Perspective of University Involvement in Improving Subsistence Farming

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Keywords: Gender, involvement, perceptions, smallholder

Introduction  
This study was conducted in a rural farming community neighboring Chuka University in Kenya. The purpose of the study was to investigate and document perceptions of farmers on engagement of Chuka University in subsistence agriculture with emphasis on gender. Farming activities in Kenya are culturally assigned based on gender. Gender refers to socially constructed role, attributes and behavior that a society considers appropriate for men and women (Lindsey, 2005).

Objectives  
1. Farmers’ opinions on university engagement in subsistence crop production.  
2. Farmers’ opinions on university involvement in livestock production.  
3. Compare occupational satisfaction of farmers around Chuka University.  
4. Compare farmers along selected demographics: gender, formal employment, age, and education

Methodology  
The population was composed of farmers around Chuka University in Kenya. Ex-post facto design was used and systematic random sampling was used to select participants (Schutt, 2004). A validated questionnaire in five point Likert scale was used in data collection. Reliability coefficient of 0.716 was established (Koul, 1993). Descriptive statistics and independent group t-test were used in data analysis (Hinkle, Wiersman, & Jurs, 2003). Alpha level of $\alpha = 0.05$ was set a priori. Analysis was done using IBM SPSS for Windows, Version 22.0. The sample size ($n = 114$) was comprised of 76 men and 38 women.
Results

Objective one yielded a mean score of 1.92 for men and 1.87 for women on a five point Likert type of scale. This was not statistically significant $p = .893$ ($p \leq .05$). Objective two revealed a mean score of 1.92 for women and 1.59 for men. This indicated a statistical significant difference ($p \leq .05$). Objective three indicated a mean of 1.33 for men and 1.39 for women. The means were not statistically significant with a $p$ value of .492 ($p \leq .05$).

Age comparison ($n = 99$) revealed men (66%) to have a mean of 39.88 years and women (34%) indicated a mean of 34.68 years. This was significant, $p = .023$ ($p \leq .05$). On formal employment ($n = 35$), men accounted for 69% and 31% for women. The difference was statistically significant with a $p$ value of .032 ($p \leq .05$). On post-secondary education ($n = 44$), men accounted for 73% of the total and 27% for women.

Conclusions and Implications

There was no statistical significant gender difference in opinions on expectations for university involvement in agricultural production. There was no gender difference on satisfaction in subsistence farming. The average age of farmers was 39.88 years for men and 34.68 years for women. The findings of this study are aimed to assist in programming university outreach and extension activities among subsistence agricultural producers with special emphasis on gender sensitivity.

Recommendations

Chuka University needs to put more effort towards working with the neighbouring farming community. The University should foster links with both men and women as both indicated comparatively low expectations. Results may not be generalized but similar studies should be conducted to compare farmers’ perspectives on the involvement of respective universities in agricultural production.

References


Follow Up Study of the Af-Pak Workshops on Strengthening Extension Skills of Young Pakistani Professionals

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Keywords: Pakistan, extension trainers, extension trainees, participatory skills, training of trainers

Introduction and Need for Research

With funds provided by the United States Department of Agriculture in collaboration with the Ministry of Agriculture, Irrigation and Livestock in Afghanistan and hosted by University of Agriculture Faisalabad-Pakistan a consortium of five Land-Grant universities was formed to meet the needs of farmers and rural poor. The consortium arranged a series of workshops on Strengthening Extension Skills of Young Professionals in Afghanistan and Pakistan (AF-PAK). Extension trainers from each U.S. institution provided technical training in areas as identified in the workshop objectives.

Research Methodology and Theoretical/Conceptual Framework

In order to determine if training received by Pakistan extension participants was actually being practiced, the purposive sampling technique was used to select seventeen extension trainers. Using participatory extension skills, learned during the workshops, extension trainers were asked to execute specific Train the Trainer (TOT) activities.

The theoretical framework for this study was based on Everett Rogers’ Theory of Diffusion of Innovations, which has two parts – the diffusion and the innovation. (Rogers, 2003). This study observed use of extension participatory learning exercises, and multiple levels of
decision-making relating to Pakistani extension trainers, trainees, and farmers exploring adoption and usage of new techniques for improved agricultural production.

Two different research instruments were developed to gather data. One instrument was for extension trainers and the other for extension trainees. Content validity of the study was established by a careful review of questions by consortium members.

Results

In comparing responses from both extension trainers and extension trainees it becomes evident that the Af-Pak workshops were a success. Extension trainers that attended the Af-Pak workshops were able to use the TOT model to help other extension trainees learn how to help Pakistani farmers identify specific problems, prioritize concerns and locate resources and materials to present possible solutions to farmers.

Conclusions/Implications

Both extension trainers and extension trainees revealed they improved their participatory extension skills through this process. It may be inferred from the research study that both extension trainers and extension trainees became more aware of the importance of their own skill development regarding identification of farmers’ problems, prioritization, and possible solutions by using participatory techniques. Moreover, it was apparent from research findings that trainers and trainees were both from diversified backgrounds of agriculture. An observation made by the research team was the lack of trainers and trainees with an extension specialization.

Recommendations for Practice

It is recommended that a follow-up study be conducted with farmers engaged in this study to determine to what extent they feel they have benefited from the assistance provided by the extension trainer and extension trainee in helping to solve their problems. This would be another way to find support for use of extension participatory skills by Pakistan extension agents.

It is also recommended that additional TOT workshops be conducted to prepare more extension workforce to use extension participatory skills with both farmers and community leaders.

References


The Implementation of a Technical Teacher Education and Workforce Development Center through Innovative Delivery Methods and Mentoring

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Introduction
Retention of teachers in Career and Technical Education (CTE) and Workforce Development is a worldwide issue that demands innovation and creativity in the delivery of teacher education through support and mentoring for instruction at both the secondary and postsecondary level. Historically, there has been a lack of qualified instructors that have the necessary technical skills to teach or train in specific vocational skill areas, as well as have skills in teaching or instruction (Rojewski, 2002). The model for the teacher education center (The Center) is designed to fill the increasing need for teachers and instructors that not only have the necessary technical skills for their vocational area, but will also gain the skills and necessary induction into the realm of teaching (Dainty & Belcher, 2008; Su, Dainty, Sandford, Townsend & Belcher, 2011).

Theoretical/Conceptual Framework
The model for The Center would implement a modified method of preparing instructors within CTE and Workforce Development and is represented in a graphic form which includes five components: Competent Instructor; Mentoring; Professional Skills and Knowledge; Technical Competence; and Instructor Resources.

The focus for this innovative teacher education program housed within a public University in the U.S., will provide the teacher/students with the needed skill or information when they need it, rather than to have to wait until the classes are offered. The course work will meet the professional components which were determined through a review of the latest CTE
literature, and are delivered through concentrated face-to-face, on-line and hybrid classes. Workshops for instructors that focus on trade skills will be presented in partnership with regional industries, as well as teacher resources being shared through the Center website.

**Conclusions/Implications**

The Center provides training for the students both in the Midwest region and internationally, with the intent of creating future educators with diverse teaching skills which meet the needs of students on a global level. This innovative model provides mentoring for teachers in the field without the requirement of being enrolled in courses, and provides a structure for immediate support for individuals new to teaching, as well as a network in the individuals’ field of expertise. The Center currently provides mentorship services to teachers in Kansas, and is encouraging other international partnerships.

Implications for this teacher education model would be a workforce that would be retained in a specific school or college for a longer period of time. Another implication for The Center is providing different points of access for education, meaning that more students could be enrolled and once completed with certification, could be employed in a high need technical area as a trainer or instructor.

**Recommendations for Future Research**

Duplication of this Center model is recommended on a global scale. The Center concept is beneficial in meeting the needs of workforce development and technical training as well as technical teacher education and development. Initial study of this model could provide further resources and innovation to practice. The mentoring model in this center could also be implemented in other teacher education and training institutions.

**References**


Information Spillovers from Extension Training: The Effectiveness of Participatory Video

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Introduction
Agriculture extension services have been one of the most important providers of agricultural knowledge for smallholder farmers in developing countries (Pigato, 2001). However, extension approaches in sub-Saharan Africa typically rely on delivering information to a small proportion of farmers, with the expectation that these farmers will voluntarily interact with others who are unable to come to the training. In this way knowledge is expected to be distributed through farmers' interpersonal networks. Participatory video has been recognized for its potential to diversify extension training modalities, to improve learning and adoption outcomes (Cai, Rodriguez & Abbott, 2014) and to encourage farmers to share the knowledge they learned (Bentley, Van Mele, Zoundji, Guindo, 2014). To date, researchers have not fully explored to what extent the use of participatory video can encourage “spillover” of social learning and training information.

Purpose and Objectives
The purpose of this study was to investigate participants’ information sharing behaviors after having attended participatory video training sessions. The research objectives were to:
1. Compare the information sharing behaviors between two distinct training modalities: traditional live demonstration and a mediated, participatory video training session.
2. Explore the association between short-term adoption of techniques and farmers’ information sharing behavior.

Methods
A total of 125 Malawian farmers participated in the study. Farmers were assigned to one of two training groups based on geographic location. A training session focusing on new food preparation techniques was conducted. Two training modalities were used: a traditional field
demonstration led by farmer trainers and a participatory video training followed by a facilitated discussion.

Evaluations were conducted for both training groups 7-10 days after the training to test short-term adoption of the demonstrated techniques and to assess participants’ knowledge sharing in their community.

**Results**

The results show that approximately 80% of the participants shared their new knowledge with non-participants within 7-10 days after the training across both training types. More than half of the participants shared the information with family (60%), while slightly more than a third shared with friends (37.5%).

The training modality had modest influences on information sharing behavior: more participants in the video group (81.5%) shared information than in the traditional group (77.8%), but this difference was not statistically significant. Also, knowledge gains were slightly different between the two groups after the training. The adopters of the food preparation techniques were more likely to share the knowledge than non-adopters ($\chi^2 = .07, p = 3.18$). Lastly, there was a slightly higher tendency for non-adopters who were in the participatory video training to share the knowledge than those in the traditional demonstration training.

**Implications and Recommendations**

This study showed that participatory video training could encourage farmers to share the knowledge they learned with others in their communities, even if they had not tested the techniques. These findings enrich the participatory video literature by demonstrating this approach’s impact on knowledge sharing behavior. Our study also provides evidence that can be used in measuring the long-term empowerment effects of participatory video training (Witt, Pemsl & Waibel, 2008).

**References**


Knowledge of International Agriculture Issues held by U.S. and Latin America Undergraduate Students

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Introduction
Today’s agricultural systems face enormous challenges regarding climate change, loss of biological diversity, loss of fertility, water shortage and loss of water quality. This is in addition to constant population growth increasing the demand for food, fiber, and fuels (International Assessment of Agricultural Knowledge, Science and Technology for Development [IAASTD], 2009). According to the IAASTD (2009), in order to efficiently and effectively meet global demand, knowledge generation is imperative.

Scholars indicated a primary goal and priority in universities should be to globalize undergraduate education (Alsup & Egginton, 2001; Bruening & Frick, 2004; Bruening & Shao, 2005). Study abroad programs may be the most effective way to provide undergraduate students the internalization of their curriculum, yet agricultural students across the U.S. have the lowest participation percentages (Brooks, S., Frick, M., & Bruening, T., 2006). However, a globalized curriculum can provide the opportunity to explore the discipline in domestic settings (Acker, D & Scanes, C., 2000). An understanding of international agricultural issues will prepare students for professional careers demanding a global perspective (Wingenbach, Boyd, Linder, Dick, Arispe & Haba; 2003).
Purpose and Objectives

This study sought to determine differences between U.S. and Latin America (L.A.) undergraduate students’ knowledge regarding international agricultural issues.

Methods

The population \((N = 1292)\) was composed of undergraduate students enrolled in Texas Tech University, a non-land grant university, in the College of Agricultural Sciences and Natural Resources \((n = 654)\), and in Zamorano University, an agricultural university in L.A. \((n = 638)\). An international agricultural issues knowledge instrument developed by Wingenbach et al (2003) was used. The instrument consisted of “20 multiple-choice questions about international agricultural policies, products, peoples, and cultures” (Wingenbach et al, 2003, p. 27). Authors established content and face validity (Wingenbach et al, 2003). Questions were updated to recent statistics. Content and face validity of revisions and updates were made by experts of Texas Tech University and Texas A&M. Participating students were asked to answer to the best of their knowledge. An independent samples t-test was used to determine differences between groups.

Results

The sample mean of U.S students overall knowledge regarding international agricultural issues of 7.21 \((SD = 2.21)\) was significantly different from 7.82 \((SD = 2.02)\), the mean of L.A. students, \(t(1290) = -5.160, p < .001\). The effect size \(d\) of .29 indicates a small effect. No significant differences were found in three questions: 1) the percentage of global food production needed by 2050, \(p = .499\), 2) global population expected growth by 2050, \(p = .077\), and 3) most important nutrient global populations lack, \(p = .071\). The effect size for each of these three questions was negligible.

Conclusions and Recommendations

Despite efforts made in classrooms to increase students’ knowledge about global issues, this study indicated only 3% of 1292 students obtained a passing score (70%). This indicates more effort should be made in both U.S. and L.A. universities to prepared future to effectively and efficiently meet global food, fiber and fuel demands as indicated by IAAASTD (2009).

References


Lessons Learned from Conducting Scoping Assessments in International Development

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Keywords: Needs assessment, scoping method, international development
Introduction
Development practitioners often conduct needs assessments before developing projects (Düvel, 2002). One potential technique to leverage finite resources while maximizing potential outcomes is a participatory method called the *scoping assessment*. This poster shares the first-hand experiences with this method from the *Innovation for Agricultural Training and Education* (InnovATE) project.

Methods and Data Sources
Twelve researchers involved in eight scoping assessments answered the questions below. Responses were categorized using a constant comparative method (Glaser & Strauss, 1967). Emergent themes included: (a) benefits; (b) limitations and challenges; and (c) good practices. Member checking was used to establish trustworthiness (Dooley, 2007).

1. What are the benefits of using a scoping assessment to gather data?
2. What are the limitations of using a scoping assessment to gather data?
3. What could/should be done to maximize the quality of the data and overall success?
4. What advice would you give others who are considering a scoping assessment?

Results
**Benefits**
- Rapid and cost effective.
- Provides direct observation of the situation and access to data otherwise unavailable.
- Allows for a dynamic and emergent approach to gather data.
- Can be used to triangulate existing data.
- Permits collection of viewpoints from multiple informants, including the marginalized.
- Builds relationships and partnerships with key stakeholders.

**Limitations and Challenges**
- Objectives may not meet the needs of all stakeholders.
- Short-term duration may not allow in-depth analysis. Access to certain stakeholders and certain geographic regions may not be possible.
- Well-connected informants are most accessible to team.
- Emergent nature of the method complicates advance planning.
- Achieving the right balance between pre-trip objectives while allowing for emergent themes.
- The quality of the data is directly related to the skills, background, and abilities of the team.
- Access to some key informants (e.g. government officials) may require advanced notice.

**Good Practices**
- Team should have appropriate research skills expertise.
- Have clear objectives for the scoping mission.
- Have a clearly defined scope of work, including specific responsibilities for team members.
- Seek out the informants who have the best information, rather than the easiest to reach.
- Plan to interact with a great variety of informants to gain many perspectives.
- Build in flexibility in scheduling to follow emergent leads.
- Seek to connect with other development agencies working in the region.
• Get out in to the field to interact with people directly impacted by issue being examined.
• Look for contradictory information from informants and seek to understand the contradiction.
• Schedule follow-up sessions with key informants to clarify key findings.
• Identify in-country consultant to facilitate informant contacts and provide contextual interpretation.
• Hold daily team meetings to triangulate observations.
• Build in time during the trip for team members to update field notes and work on reports.

**Recommendations & Implications**

Practitioners looking to implement the scoping method should consider the practices identified by this study. Further examinations of the scoping method in other projects would help build a stronger understanding this method and the conditions under which it yields the best outcomes.

**References**


Measuring Intercultural Sensitivity of International Students from Zamorano University at Texas Tech University: The Impact of an Internship Program

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Introduction
Internships have become a popular way to expose students to real world agricultural situations (Jones, Wu, & Hargrove, 2002). Zamorano University, located in Honduras, is one of the leading agricultural universities in Latin America, with an enrollment of 1267 students from 20 different countries (Zamorano University, 2014). The academic program requires students to participate in a 15-week internship. In the spring of 2012, one student was brought to Texas Tech University as an intern. Afterwards, an official internship program with Zamorano University was created as an outreach program from Texas Tech University with the goal of improving food safety and education (Jurek, 2013). This study sought to evaluate the experiences of students who participated in an internship at Texas Tech University from Zamorano University and the impact on the students’ professional career pathway.

Research methodology
A qualitative case study was conducted with International students who participated in an internship program at a Texas Tech University during the spring semesters of 2012 and 2013 (N = 8). The bounded system of the case study consisted of a convenience sample of students willing to participate. Data was collected through face-to-face and video conference interviews according to the participants’ geographic location. Interviews were recorded and then transcribed for analysis within and between participants. Visual documents that participants voluntarily offered such as photographs during the internship, letter of intent, progress reports, GPA score and TOEFL scores were used as part of the analysis. Interviews were conducted, transcribed and open-coded in Spanish. Afterwards, the open-coding with supportive quotes was translated into English.
Results

The internship program had a positive impact on the participants’ career path. The following themes emerged: cultural shock, language barriers, graduate school, and work experience. Participants who chose to enter the workforce used the internship experience as an added value to their curriculum for job applications in their field. Other participants used the internship experience as a tool to apply to graduate school. Their chosen career path was influenced by their exposure to a graduate level environment including research, graduate student and faculty interaction, and class survey. Interns mentioned cultural shock and adaptation to the culture as an initial limitation including language barriers, but highlighted the positive impact the internship had on their cultural awareness and language proficiency by interacting with different cultures on a daily basis.

Conclusions/Implications

The internship program is an opportunity for career path orientation. It provides a job experience and a graduate school environment exposure to the interns. This experience strengthened their ability to decide near future career paths. Additionally, an internship abroad provided students the opportunity to improve their cultural fluency by exposing them to a different culture. This is considered an additional outcome to their internship experience.

Recommendations

It is recommended to continue the internship program and follow up with participants to evaluate the impact on their lives, and find ways to continually improve the program in order to provide a high quality experience.

References


Passive-Air Solar Dehydrator: An Innovation with Application in Agricultural and Food Security Development in Sub-Saharan Africa and Beyond

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Keywords: Food Preservation, food dehydration, passive-air solar dehydrator, Sub-Saharan Africa, Rwanda

Introduction/Need

Post-harvest food preservation and storage are two major obstacles to food security in the developing world (Godfray et al., 2010). Sub-Saharan Africa has the highest incidence of undernourishment and is the most food insecure region of the world (Clover, 2003) and access to consistent electricity in this area is often low or nonexistent in rural areas (Karekezi & Kimani 2002; Davidson & Mwakasonda, 2004).

Research has suggested “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” (Moriba, Kandeh, & Edwards, 2011, p. 45), and agricultural development is crucial to economic stability in Africa (Miller & Shinn, 2012). Dehydration is a good way to prevent food spoilage, retain what can’t be sold or consumed immediately, and provide diverse marketing potential. This is especially applicable to small-scale farmers in developing countries where food preservation and transportation are two leading obstacles to food security and economic success.

How the Innovation Works / Costs & Resources

Passive-Air Solar Dehydrators, once built, use no electricity, instead relying on solar energy to power convection currents inside, which flow through the structure and carry moisture away from food within. Constructed of wood joined by framing brackets, nails and screws, several screen trays, and a large glass or plastic panel, it resembles a small shed with a ramp (the solar collector) attached to one side. The cost for materials to build the dehydrator was approximately $1000 U.S. dollars.

The solar collector is a bottom-vented duct topped by a UV penetrable panel and painted black on the inside. Air enters through the vent and is heated by the greenhouse effect within the collector chamber, causing it to lose density and rise. The air then flows through a vent at the top of a cabinet fitted with trays on which produce has been placed. The air becomes heavy with moisture from the produce, falls to the bottom and departs through a vent at the back of the
dehydrator. It is the movement of the air, via the greenhouse effect and convection currents, that ultimately removes moisture and dehydrates the produce.

Results
This poster will provide a pictorial representation of a passive-air solar food dehydrator that manipulates the sun’s energy to dehydrate fruits and vegetables. The lead author designed and built two such structures, one on the Washington State University campus and one on-site in the rural community of Gashora, Rwanda.

Conclusions/Implications/Recommendations
This innovation was developed to assist a rural population meet their need for a low-energy mechanism of food preservation. The attributes of this dehydration approach make it a viable option for food preservation in many regions and on variable scales. As shared by Tobin, Bruening, Brennan, and Olson (2012), lessening dependence on external resources and inputs is critical to success in development efforts. Further experimentation with this innovation can produce prototypes resulting from local design that use varied materials, which could be applied in areas where access to materials (i.e., wood and metal) is low.

References
Perceptions of Animal Health Workers in International Development Activities

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Introduction/Need for Research

Animal health workers affiliated with land-grant universities in the United States have been providing technical assistance in the areas of disease prevention, control and management in developing countries. The emergence and re-emergence of economically important diseases have been the focus of attention because of their potential effects on food security and environmental sustainability. Of late, there have been observations on the varying levels of participation in international development work. The purpose of this study was to identify the perceptions and motivational factors affecting animal health workers who were born from different countries regarding their involvement in international program activities.

Research Methodology and Conceptual/Theoretical Framework

A survey instrument using a Likert-type scale was used in this study. Both descriptive and inferential analyses were used. The descriptive procedure included frequencies, percentages, means and standard deviations. The software program Statistical Package for Social Sciences (SPSS) was used in the analysis of the data. The humanistic theory of motivation is a strong theoretical framework in this study which argues that behavior arises directly from underlying source of motivation (Arkes, 1982).

Results

Five highly significant differences were found on the sources of original motivation by country of birth. The U.S.-born respondents had a mean score of 4.07 (on a 5-point Likert scale) on the item because it is interesting and important work. The non-U.S. born respondents had a mean of 2.57 on this item which was significantly lower than the mean score of the U.S.-born respondents. The U.S.-born respondents gave a higher mean score of 4.05 on the item a desire to provide humanitarian service to people in developing countries. This mean score was significantly higher than the mean score of 2.50 given by the non-U.S.-born respondents.

U.S.-born respondents were more curious to see other parts of the world. This was shown on the mean scores given to this item of 4.09 and 3.0 by the U.S.-born respondents and non-U.S.
born respondents, respectively. Non-U.S.-born respondents had less interest in knowing the problems of developing countries. This was revealed by the mean score of 2.80 they had given compared to the mean score of 4.02 given by the U.S.-born respondents. The interest in the problems of developing countries is a better motivation for U.S.-born respondents than for non-U.S.-born respondents. U.S.-born respondents did not view their participation in international development activities as a means to add to their income. The non-US-born respondents looked at additional income as a motivation for participating in international development activities.

Conclusions/Implications

The results provided useful information to help maximize the contribution of animal health workers can make to professional development of themselves, to their university, and to developing countries. This information might also be useful in policy formulation and strategic planning.

Recommendations

This study suggested tapping animal health workers regardless of their country of birth to participate in international development activities. A periodic assessment on the level of interest by way of a survey or other forms of inquiry can prove to be useful in strategic planning at the college level.

References


Perceptions of Biotechnology in the Hawaiian Islands

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Keywords: Biotechnology, perceptions, public opinion, genetic engineering

Introduction
A total of 432.9 million acres of genetically engineered (GE) crops were grown in 2013; of these, the United States produced approximately 173.2 million acres (James, 2013). Hawai‘i, a centerpiece location for the development and production of GE crops, produced approximately 1.1 million agricultural acres in 2011 (HDA & USDA-NASS, 2013). Local farmers and large seed companies use this land to grow various GE crops. Although genetically modified organisms have many benefits and are safe for consumption (U.S. Food and Drug Administration [FDA], 2014), polarized views exist. Some local groups in Hawai‘i advocate against biotechnology. Ongoing litigation in Hawai‘i, Kaua‘i, and Maui Counties pertaining to biotechnology persists, and there is a dearth of unbiased, public opinion data from which to create educational programming.

Purpose Statement
The purpose of this poster is to visually depict the perceptions of Hawai‘i residents about biotechnology attributes.

Methods
A survey instrument was developed based on pre-established questions (International Service for the Acquisition of Agri-Biotech Applications, 2002) about biotechnology attributes in food. Twelve attributes were placed on a summated scale of 1-10 (1 = Very Unfavorable; 10 = Very Favorable). A panel of experts assessed face and content validity (Fraenkel & Wallen, 2006). A research company conducted telephone interviews to collect responses; 700 Hawaiian
Results

Hawai‘i residents had mean perceptions of biotechnology attributes between 4.67 and 6.98. The lowest held perceptions of attributes were found for Application on Animals; Maui County had the lowest mean in this area ($M = 4.72$). The most favored attributes were Lower the Cost of Food, Clean the Environment, and Increase Nutritional Value. Thirty-eight percent of all respondents ranked Lower the Cost of Food as a 9 or 10 and 35% ranked both Clean the Environment and Increase Nutritional Value as a 9 or 10. The most favored attribute was Lower the Cost of Food by participants from Hawai‘i County ($M = 6.98$).

Conclusions and Recommendations

Although the FDA (2014) has found GE products to be beneficial and safe to consume, it can be concluded that there is a general concern toward biotechnology in food products in Hawai‘i. Future research should explore the perception differences so appropriate education and training programming may be developed based on the findings. It is recommended that educational and marketing materials be created to address these concerns. Qualitative research is recommended so probing questions (Lincoln & Guba, 1985) may be asked to gain deeper knowledge about residents’ perceptions toward biotechnology.

Educational Importance

The educational importance of this study lies in education and extension education efforts in Hawai‘i. Educators and extension agents should be aware of the perceptions of biotechnology and be prepared to provide research-based, unbiased information in an appropriate manner. Educators should foster good consumers of research and incorporate high-level critical thinking skills about agricultural issues into the classroom and extension agents must be prepared to provide such programming to community members and producers.

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Private Extension Services and Technology Adoption in Trinidad and Tobago

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Introduction
Across borders, privatization of extension services has emerged as a result of the withdrawal of funding for public sector agencies (Christoplos, 2010). This in turn caused farmers to lose access to impartial and independent advice. Farmers in Trinidad and Tobago are continuously complaining about the irregularity of the extension officers representing the public extension services. Extension services affiliated with the public sector are often considered ill equipped to take on the challenges of market-oriented extension (Christoplos, 2010). With the lack of private service providers within Trinidad and Tobago, many agricultural input suppliers have undertaken extension activities as a marketing tool to increase sales. Despite limited agricultural training and the deficiency in concern with the impact of chemical fertilizers and pesticides on the environment, farmers rely upon these suppliers for technical advice (Qamar, 2013).

This study proposes that the private extension advisory service may allow farmers to have an avenue by which technology may be adopted more readily owing to the confidence and level of commitment the private service may have gained with the farming community.

How the Innovative Program Works
A longitudinal study was carried out with a sampling unit of 100 farmers. Quantitative data on the use of public extension as the main advisory service was gathered for a period of nine months. Data is also collected for a nine month period after the implementation of a privatized extension advisory service. By use of logistic regression, a measurement of the relationship between the independent variable and the dependent variable; extension services would be determined; then a pre and post intervention comparison is made.

Results
Results underscore that farmers are unsatisfied with the public extension services in Trinidad and Tobago and are hesitant to adopt technology when attempting to be transferred to
them. Eighty percent of farmers were more inclined to make use technology from the private extension services.

**Conclusion / Implications**

“Extension services should be a part of a larger decentralization agenda that engages local government units and grassroots organizations” (Swanson, 2008). It can be concluded from the preliminary results that extension services within Trinidad and Tobago need to take a more pluralistic approach to better help farmers.

One major implication however, is that the study further adds to the farmers’ negative perception towards public extension advisory services.

**Recommendations**

- Develop a full-fledged extension advisory service to allow extension programmers to approach farmers with effective and competent technologies
- Allow for a two way interaction of the typical extension system between farmers and the advisory services
- Implement information communication technologies to reduce time taken for farmers to obtain new information and results from field tests by means of online communication.

**References**


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Rural Small Holder Farmer Field Days in Malawi

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Keywords: Rural small holder farmers, extension teaching method, field days, improved maize varieties, adoption

Introduction

In Malawi the agriculture extension personnel to farmer ratio is 1:2,500 while the recommended ratio is 1:750 (Chowa, 2010). This necessitates the use of teaching methods that reduce the gap.

Field day is a teaching method used by extension workers to explain improved agricultural technologies to farmers (Ajayi, 2001). The objective, as stated by Gibbons and Schroeder (1983) is: “to bring farmers together to enable them to gain knowledge and skills and stimulate adoption of improved technologies by farmers so as to improve yield” (p. 171).

According to DAES (1997), in planning field days a committee (farmers and extension workers) is put in place. During the actual field day farmers view the sites after which, the extension worker asks farmers what they saw and learned.

The purpose of this study was to describe the contribution of field days to promoting the adoption of improved maize varieties by small holder farmers. The theoretical framework came from Everett Rogers’ Theory of Diffusion of Innovations which explains how new ideas and technologies are spread and adopted in a community (Rogers, 2003).

Results

Of the sixty farmers in the study 29 (48.3%) were male and 31 (51.7%) were female. Female farmers had a higher percentage because the study area has a matrilineal family system. The majority of farmers had at least a primary education, while 18.3% of the farmers had no education. The demonstration plots had posters up. The host farmers and extension workers showed good knowledge and explained clearly about improved maize varieties.

Set up of demonstration plots was satisfactory. The field day enabled interactive learning for farmers and the level of participation by farmers was satisfactory. Fifty-three (88.3%) farmers rated field day as an appropriate method for disseminating improved maize varieties.
Farmers suggested field days be conducted near the farmer’s village and farmers participate in all stages of maize production. A Rank Biserial Coefficient ($r_{pb}$) indicated a significant relationship between marital status and number of acres of maize grown. The results also showed that level of education was negatively related to area of maize grown last season. Farm size in acres was positively related to the number of acres of maize grown last season with a spearman correlation coefficient ($r = .716$).

**Conclusions/Implications**

Host farmers and extension workers need to be prompt and knowledgeable about the content that is demonstrated during field day, which will help them adequately explain what is demonstrated. There is a need to have special viewing sessions of the demonstration plots just for women farmers. Posters placed on a demonstration plot should be illustrated so illiterate farmers are able to follow what is happening. Policy makers in Malawi can use information from this study to conduct refresher courses for extension workers on how to plan and conduct field days. Field days are effective in promoting adoption of improved maize varieties by small holder farmers. However extension workers have to conduct frequent follow-up visits in order to address questions farmers may have after field days.

**References**


Strengthening the Human and Institutional Capacity of Sokoine University of Agriculture, Tanzania

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Keywords: Food security, institutional capacity building, Tanzania

University contributions to sustainable agricultural development in sub-Saharan Africa are well documented. This is especially true for Faculties of Agriculture (FOAs). Building higher agricultural education capacity is essential for sustainable national development. In an increasingly knowledge-based global economy, well-educated citizens are essential to take advantage of emerging technologies and to use science as a development tool.

The concept of capacity building has been transitioning from a focus on human capacity development to a broader approach focused on institutional capacity building (ICB). The Innovative Agricultural Research Initiative (iAGRI) is designed to strengthen the capacity of Sokoine University of Agriculture (SUA) to maximize research, development and dissemination of research-based technological solutions to problems associated with food security in Tanzania. Both the Tanzanian Government and USAID recognized this need when they developed the framework for iAGRI. The project addresses these gaps by focusing on multiple dimensions of ICB.

iAGRI objectives include: (a) long-term degree training (135 M.Sc. and Ph.D. degrees); (b) support for collaborative research programs involving researchers at SUA, the Ministry of Agriculture, Cooperatives and Food Security (MAFC), and U.S. partner universities that address major constraints to achieving food security in Tanzania; (c) institutional capacity strengthening of SUA; and (d) development of linkages with Global South institutions.

Long-term degree training and collaborative research programs were informed by a needs assessment conducted at the onset of iAGRI that identified future trends and constraints in the Tanzanian food system. This assessment identified eight priority areas for research, development and training.

Through long-term training, iAGRI is increasing the capacity of Tanzania’s researchers, educators and extension providers to help increase farmer incomes and resilience to climate change, and to better respond to national food security goals. Through nine collaborative
research programs, iAGRI is building bridges between U.S. and Tanzanian scientists that will enable them to take advantage of technological advances. Important policy-related issues in agriculture and nutrition are being addressed through four funded agricultural policy research projects.

Additional dimensions of capacity building are being addressed at the institutional level. iAGRI has increasingly focused on working with SUA administration to address issues of organizational change management, many of which deal with its capacity to respond to changes in its social, political and economic environment. Specific inputs have improved information communication technology, teaching methodologies, research capacity and classroom infrastructure on campus. Other inputs have focused on developing public-private partnerships. The overarching framework for institutional capacity building is related to SUA’s attempt to implement its strategic plan.

iAGRI’s focus on leadership and change management capacity represents a unique departure from most past institutional development activity. It recognizes that a supportive institutional environment is required in order for individual faculty members and staff to maximize returns from training received. It also recognizes that the ability to address changing institutional environmental conditions is required in order for SUA to be a lead African institution in the 21st century.
Support Programs for Organic Farmers

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Keywords: Organic Agriculture, extension, MWDS, needs assessment, organic certification

Introduction and need for research
The organic supply chain has experienced challenging input and product scarcity problems since 2000 due to rapid and exponential growth (Greene et al., 2009). Although US government policy makers have created programs that address the needs for improvement and expansion of organic farming systems, the reason why supply is not meeting consumer demands remains unexplained.

The purpose of this study is to determine what “help” is needed to support organic businesses, what programs and efforts are currently available, and what needs are currently not being met.

Research Methodology
The researchers developed a list of 21 needs of organic growers through content analysis and synthesis of the literature. Using this list, the researchers developed an instrument to assess the perceived level of importance of each need, and the perceived availability of programs addressing each need. In a pilot study to evaluate the instrument, the researchers collected and analyzed 24 usable responses from organic growers in their state (Cronbach Alpha 0.94 for construct ‘importance’ and 0.955 for construct ‘availability’). The responses were then analyzed following the Borich needs assessment model (1980) whereas a Mean Weighted discrepancy score (MWDS) was calculated for each item to determine the priority of the need.

Results
The five top MWDS ranked needs were: accessible and affordable certification process; organization of the organic agriculture industry; training programs from Extension [personnel] to support organic farmers; training for optimization/expansion of organic businesses and alternative paths; and a market for organic produce and/or programs to expand it.

Recommendations for practice and research
The finding that an accessible and affordable certification process was top priority for growers is parallel to the results discussed by Padilla-Bravo, Spiller and Villalobos (2012), who suggested the need for a more uniform and efficient organic certification. The researchers...
recommend advocacy for a more streamlined certification process, as well as the development of programs to guide growers embarking in certification.

Park and Lohr (2007) discussed performance efficiency of Extension personnel working with organic producers. Similarly, research participants indicated that Extension does not provide the best means of assistance regarding organic production. The researchers recommend more training programs for Extension personnel regarding the particularities of organic businesses.

The researchers found that needs for basic training/information for organic farmers to help solve general technical and production field issues, as well as updated information about research on agronomic problems, represented growers’ lowest priorities. This was interesting because most of the research literature identified needs to address specific production issues and related training. Extension, thus, needs to better identify and address growers’ training priorities. More research is required to identify the needs of organic producers and provide direction for support programs for organic producers by policy makers, agricultural agencies, Extension, and local and federal groups. The instrument developed through this research can be used as a starting tool to help define the needs of the farmers in each context and environment.

References
Using Field-based Research Experiences to Mentor and Empower Aspiring Investigators to Develop Local Research Capacity

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Keywords: AKS, empowerment, mentoring, research assistant

Introduction/Need for Research/Conceptual Framework

Highly functioning Agricultural Knowledge Systems (AKS) and Agricultural Innovation Systems (AIS) are vital for countries facing food security challenges (Blackie, 2008; Seck, Diagne, & Bamba, 2012). Pluralistic research capacity in the public and private sectors is essential to an adaptive AKS (Gaillard, Krishna, & Waast, 1997; OECD, 2012). Expanding research capacity requires empowering local participants to conduct research and help set the research agenda (Chilesa, 2012; Cortina, 2010; Tuhiwai-Smith, 1999). Researchers can expand this capacity by mentoring individuals who have promising skills and capacities to conduct field research but may not be part of the traditional research and discovery system. This can be an opportunity for principal investigators to empower their assistants. Empowerment theories maintain that interventions provide participants opportunities to gain knowledge, skills, and engage them as partners (Perkins & Zimmerman, 1995). Swift and Levin (1987) argued empowerment involves both processes and outcomes.

An investigation conducted in Cote d’Ivoire and Mali enabled the lead researcher to train six assistants about the basics of research, including protocols for human subjects and data collection. The assistants were also equipped to understand and address cross-cultural differences in the communities surveyed. The assistants’ experiences in conducting research formed the basis for the action research study (McKernan, 1991) reported on here.

Purpose/Objective

This study’s purpose was to assess how a field research opportunity empowered research assistants during a dissertation study on post-conflict communication practices in rural communities conducted in Cote d’Ivoire and Mali during 2014.
Research Methodology

Semi-structured, focus group interviews were used to capture the research assistants’ perceptions of what they had learned. At the end of data collection in a country, the lead researcher conducted two-hour interviews to assess the empowerment levels of the six assistants – three per country. The interviews were transcribed verbatim and analyzed using qualitative research procedures (Creswell, 2013).

Results/Conclusions

The study revealed that participants gained more understanding of the implications of armed conflict on the rural communities studied. While acquiring interviewing and other data collection skills, the assistants learned more about the socio-political environment and the challenges facing rural communities. The lead researcher also perceived changes in the assistants’ knowledge and attitudes regarding the value of scientific inquiry and its rigor.

The process of learning research skills and putting such into practice empowered the research assistants and led them to envision their future development as researchers and community activists. Moreover, the participants expressed a desire to conduct research in the agriculture and food sector in the future. These outcomes support the role of learning by doing to empower individuals for future personal development, including career preparation in the social sciences.

Recommendations/Implications for Practice

This study was an application of various empowerment theories (Perkins & Zimmerman, 1995). The results can be used to develop principles for building capacities of research assistants while preparing local expertise to support adaptive AKS and AIS to meet the food security challenges of developing countries.

References


Youth Mentoring in a Volunteer Limited World

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Introduction
In the U.S. and abroad research has shown that caring adult mentors can have positive impacts in the lives of youth (Jekielek, Moore, Hair, & Scarupa, 2002; Klinch, Cardinal, Gibson, Bisanz, & da Costa, 2005). Positive relationships with extra familial adults have been indicated in promoting resiliency among youth from at-risk backgrounds (Coller & Kuo, 2014; Grossman & Rhodes, 2002). Youth mentoring is a resource for youth that provides emotional support, advice, and guidance about subjects that adolescents might feel uncomfortable, apprehensive, or fearful discussing with their parents (DuBois, Holloway, Valentine, & Cooper, 2002; Grossman & Bulle, 2006). At the same time, youth mentoring programs based on a 1:1 mentor-mentee ratio strains volunteer involvement as a community resource (Crooks, Chiodo, Thomas, & Hughes, 2010) and is typically not valued by youth (Herrera, Vang & Gale 2002). This is particularly true in countries where cultural barriers influence volunteerism (Thurman, Snider, Boris, Kalisa, Nyirazinyoye, & Brown, 2008). This leads to limitations in the number of youth that can benefit from a mentoring relationship as in general, volunteers are a limited resource.

Purpose and Objectives
The purpose of this study was to evaluate the quality of a group mentoring program. The objectives of the study were to: examine the extent to which youth mentoring programs are youth centered; determine the extent to which youth are emotionally engaged in the mentoring program; and to examine youth satisfaction with their mentor.

Methods
This study included youth participating in an afterschool mentoring program in the U.S. (n=107). The survey instrument included 19 questions that measure three domains of the youth-mentor relationship (Jucovy, 2002). The three domains include: the extent to which the relationship is centered on youth (YC); the youth’s emotional engagement with the mentor (EE);
and the extent to which the youth is dissatisfied with the mentor relationship (YD). The researchers collected data at two different time points, approximately 9 months apart, to assess the quality of mentoring.

**Results**

At the end of time period one youth reported that the mentoring program was not very youth centered \((M = 2.52, SD = .73)\), not emotionally engaging \((M = 2.34, SD = .70)\), and youth were not particularly satisfied with the mentor relationship \((M = 2.06, SD = .69)\). Approximately nine months later, a second survey was administered. By the end of the second time period, youth reported that the mentoring program had become more youth-centered \((M = 3.01, SD = .37)\), more emotionally engaging \((M = 3.07, SD = .39)\), and less dissatisfied \((M = 1.65, SD = .42)\).

**Implications and Recommendations**

Group mentoring is an effective youth development approach that can improve youth behaviors and attitudes. This is particularly true in countries where volunteer resources are more limited. Consistent with Grossman, Chan, Schwartz, & Rhodes (2012), the mentoring relationship in this study improved over time. The researchers recommend that mentors must commit to mentor-mentee relationship of at least 24 weeks and mentor recruitment strategies can be based upon 1:4 mentor-mentee ratios.

**References**


