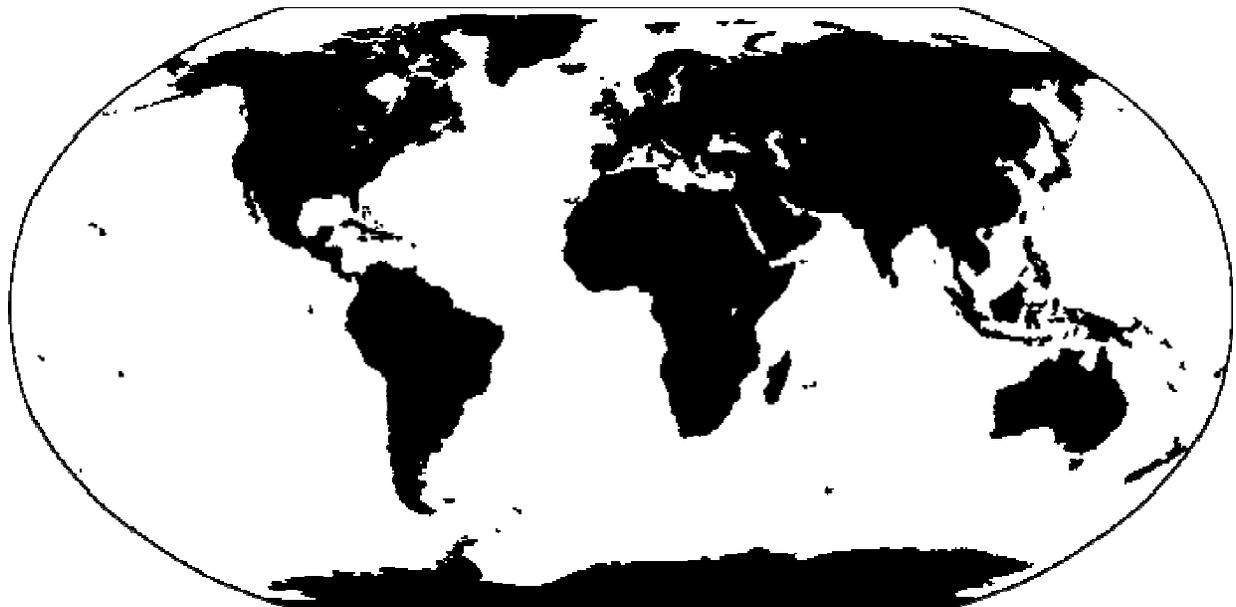


Volume 13, Number 2

Summer 2006

*Journal of
International Agricultural
and Extension Education*



AIAEE

A publication of the Association for International Agricultural and Extension Education

Journal of International Agricultural and Extension Education

ISSN 1077-0755

The *Journal of International Agricultural and Extension Education* is the official peer-reviewed, refereed publication of the Association for International Agricultural and Extension Education. The purpose of the *Journal* is to enhance the research and knowledge base of agricultural and extension education from an international perspective.

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

Three types of articles are solicited for the *Journal*: Feature Articles; Commentary Articles; Tools of the Profession Articles.

Feature Articles

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

Commentary Articles

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

Tools of the Profession Articles

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

The *Journal* is distributed in two formats: Individual rates are \$45/year for a printed copy or \$30/year for an electronic version; library rates are \$75/year for printed copies only. Subscriptions may be acquired online at <http://www.aiaee.org/jiaee/journalsub.asp>, or by filling out the form located at the end of this journal. All subscriptions must be made payable to **JIAEE** and mailed to Dr. Gary J. Wingenbach, 2116 TAMU, Department of Agricultural Education, Texas A&M University, College Station, TX 77843-2116. Please visit the *Journal* Web site at <http://www.aiaee.org/journal.html> and the AIAEE Web site at <http://www.aiaee.org/index.html>

Editorial Board.....2
From the Editor.....4

22nd Annual AIAEE Conference Keynote Address

An International Agricultural Education Undergraduate Model to Enhance Cooperation and Collaboration.....5

Dr. Valery Chumakov, Vice-rector Moscow State Agroengineering University

Dr. Thomas H. Bruening, Associate Professor, Penn State University

Dr. Martin Frick, Associate Professor, Montana State University

Mr. Curt Friedel, Graduate Student, University of Florida

Mr. Javier Moreno, Undergraduate Student, Penn State University

Feature Articles

Exploring Youth Development Workers in the Process of Civic Youth Engagement in Trinidad and Tobago.....15

Nicole Webster, The Pennsylvania State University

Wayne Ganpat, Ministry of Agriculture, Land and Marine Resources, Trinidad

Beliefs, Attitudes, Perceptions, and Barriers toward International Involvement among College of Agriculture and Life Science Students.....27

Tracy Irani, Nick T. Place, and Curt Friedel, University of Florida

Extension Service and Farmer Decision Making on New Cropping Lands in East Lombok, Indonesia.....39

Taslim Sjah, University of Mataram, Indonesia

Donald Cameron, University of Queensland, Australia

Keith Woodford, Lincoln University, New Zealand

Commentary

Agricultural Knowledge and Development in a New Age and a Different World.....57
William M. Rivera, University of Maryland

Book Review

[Review of the book *Mozambique's experience in building a national extension system*].....69
Cynthia Barnett, Iowa State University

22nd Annual AIAEE Conference: Clearwater Beach, Florida, May 14-19, 2006

Professional Paper Presentation Abstracts.....73

Outstanding Professional Paper Presentations.....101

Outstanding Poster Presentations.....102

Outstanding Carousel Roundtable Presentations.....103

AIAEE Award Winners for 2005.....104

Journal Article of the Year Awards for 2005.....105

Subscription Form.....106

Editorial Board

The editorial board consists of the editor, the past editor and thirteen other members representing the US/Canada, Africa, Australia, Europe and Central/South America regions.

U.S./Canada Representatives

Gary J. Wingenbach, Editor
Department of Agricultural Education
Texas A&M University
2116 TAMU, 218 Scoates Hall
College Station, TX 77843-2116
Ph. (979) 862-1507
Fax (979) 845-6292
g-wingenbach@tamu.edu

Nick T. Place, Associate Editor (Commentary)
Dept. of Agri. Education and Communication
University of Florida
219 Rolfs Hall/PO Box 110540
Gainesville, FL 32611-0540
Ph. 352-392-0502, ext. 227
Fax 352-392-9585
nplace@ufl.edu

James R. Lindner, Associate Editor (Tools)
Department of Agricultural Education
Texas A&M University
2116 TAMU, 228C Scoates Hall
College Station, TX 77843-2116
Ph. (979) 458-2701
Fax (979) 845-6292
j-lindner@tamu.edu

M. Craig Edwards, Associate Editor (Book Review)
Dept. of Agri. Ed., Comm., & 4-H Youth Dev.
Oklahoma State University
456 Agricultural Hall
Stillwater, OK 74078-6031
Ph. (405) 744-8141
Fax (405) 744-5176
edwarmc@okstate.edu

James J. Connors, Past Editor
Dept. of Human & Comm. Res. Development
The Ohio State University
216 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH 43210-1067
connors.49@osu.edu

Maria Navarro, Associate Editor (Spanish)
105 Four Towers
Dept. of Agri. Leadership, Ed., & Comm.
The University of Georgia
Athens, GA 30602-4355
mnavarro@uga.edu

Mohamed M. Yacoub, Associate Editor (French)
Higher Institute for Agricultural Cooperation
P.O. Box 198 Hadayek Shoubra
Cairo, Egypt
mmyacoub@yahoo.com

Randall J. Andreasen, Ph.D.
4986 Gem Street
Las Cruces, NM 88012-9452
randaroo22@hotmail.com

Adewale Johnson Alonge, Ph.D.
Miami-Dade Public School System
9034 SW 163 Terrace
Miami, FL 33157
alongej@yahoo.com

Jerry D. Gibson, Associate Professor
Dept. of Agricultural and Extension Education
Virginia Tech University
230 Smyth Hall
Blacksburg, VA 24061
gibsonj@vt.edu

Edna L. McBreen, Associate Vice Chancellor
University of Connecticut-Tri-Campus
Rowland Government Center
55 West Main Street, Suite 500
Waterbury, CT 06702
edna.mcbreen@uconn.edu

Nick T. Place, AIAEE President
University of Florida
219 Rolfs Hall, PO Box 110540
Gainesville, FL 32611-0540
nplace@ufl.edu

World Region Representatives

David Wissink, Manager
External Affairs & Sustainable Development
Highlands Kainantu Limited
Private Mail Bag, Lae, Morobe Province 411
Papua New Guinea
dwissink@HighlandsPacific.com

Anibal Quispe, Ph.D.
Agricultural Education and Extension
Km.35.5 Carretera México-Texcoco, Montecillo
Texcoco 56230
México
anibalq@colpos.colpos.mx

Paul Schuetz, Ph.D.
Agricultural Economics
Dag_Hammerskjoeld-Weg 1-5
Eschborn 65760
Germany
paul.schuetz@gtz.de

Raymond Auerbach, Director
Rainman Landcare Foundation
Peacevale Road
Hillcrest
KwaZulu-Natal 3650
South Africa
auerbach@iafrica.com

Prof Artur Cristóvão
UTAD, Economics and Sociology Department
Av Almeida Lucena 1
5000-611 Vila Real
Portugal
acristov@utad.pt

Eduardo Delgado, Ph.D.
Instituto Nacional de Investigaciones Agrícolas
INIA-Barinas
Barinas 5201, apartado postal 178
Venezuela
delgado_ed8@hotmail.com
duqueedu@yahoo.com

AIAEE 2006-2007 OFFICERS

Nick T. Place, President
University of Florida
Dept. of Agri. Education and Communication
219 Rolfs Hall, PO Box 110540
Gainesville, FL 32611-0540

John R. Vreyens, President-Elect
International Programs and MAST International
University of Minnesota
190 Coffey Hall, 1420 Eckles Avenue
St. Paul, MN 55108

B. Lynn Jones, Past President
Iowa State University
201 Curtiss Hall
Ames, Iowa 50011

Dr. Dermot J. Ruane, Board Member at Large
UCD School of Agriculture, Food Science and
Veterinary Medicine
College of Life Sciences
UCD Agri. and Food Science Centre #G19
University College Dublin
Belfield
Dublin 4
Ireland

Theresa Murphrey, Secretary
Texas A&M University
2116 TAMU, 107 Scoates Hall
College Station, TX 77843-2116

Thomas H. Bruening, Treasurer
The Pennsylvania State University
Dept. of Agricultural and Extension Education
323 Agricultural Administration Building
University Park, PA 16802-2601

Aurelio Curbelo, Graduate Student Rep
Iowa State University
Department of Agricultural Education & Studies
223 Curtiss Hall
Ames, Iowa 50014

From the Editor

Greeting to all members of the Association for International Agricultural and Extension Education (AIAEE) and to all readers of the *Journal of International Agricultural and Extension Education (JIAEE)*! The *JIAEE* summer issue brings many contributions from the 22nd Annual AIAEE Conference, held in beautiful Clearwater Beach, Florida. On behalf of the AIAEE, we say “thank you” to Pete Vergot III, Nick Place, the AIAEE leadership team, and their many helpful volunteers for planning, coordinating, and hosting a wonderful conference in Clearwater Beach. I am hopeful all conference attendees enjoyed visiting Florida.

Have you considered starting and/or participating in an international agricultural education student exchange program? If so, you will find much insightful reading on this topic in our first article, which is a synopsis of the Keynote Panel Discussion from the 22nd Annual AIAEE Conference. The authors, Chumakov, Bruening, Frick, Friedel, and Moreno (p. 5), presented thoughts from an innovative program between several U.S. universities and the Moscow State Agricultural Engineering in Moscow, Russia. Collaboration and cooperation, from many agriculturally-related entities in such a program, are highly integral elements for success.

Webster and Ganpat explored the concept of civic youth development in Trinidad and Tobago (p. 15). Their qualitative study could be the framework from which similar studies worldwide could be initiated, as the literature base in civic youth development is scarce. Irani, Place, and Friedel assessed perceptions of potential barriers affecting students’ likelihood of participating in international learning at the University of Florida’s College of Agricultural and Life Sciences (p. 27). Financial costs and time remain the most relevant barriers. Sjah and Cameron provide us with an insightful analysis of farming systems management on new cropping lands in East Lombok, Indonesia, and its applications for extension (p. 39). Rivera provides commentary on the developments and issues regarding agricultural knowledge systems which affect agricultural development (p. 57). Barnett contributed a review of the book, *Mozambique’s experience in building a national extension system*, by Gemo, Eicher, and Teclerariam (2005). Finally, as is our tradition with the summer issue of the *JIAEE*, abstracts from all papers accepted for presentation at the 22nd Annual AIAEE Conference in Clearwater Beach, Florida are included (p. 73), as are listings of all association and journal award winners (pp. 106-110). Please send your congratulations to all award winners and make plans to nominate your own work and/or your colleagues’ contributions to next year’s award selection processes.

Thank you to all *JIAEE* contributors, reviewers, and board members for assisting in the production of this issue. Enjoy your summer issue and continue doing what you can to promote greater understanding of agricultural and extension education worldwide.

Sincerely,



Gary J. Wingenbach, Editor
Journal of International Agricultural and Extension Education

**An International Agricultural Education Undergraduate Model to Enhance
Cooperation and Collaboration**

Keynote Panel Discussion presented by

Dr. Valery Chumakov, Vice-rector Moscow State Agroengineering University
Dr. Thomas H. Bruening, Associate Professor, Penn State University
Dr. Martin Frick, Associate Professor, Montana State University
Mr. Curt Friedel, Graduate Student, University of Florida
Mr. Javier Moreno, Undergraduate Student, Penn State University

Presented to the 22nd Annual Meeting of the
Association for International Agricultural and Extension Education
Clearwater Beach, Florida
May 14, 2006

I am very pleased to be here with you today working with my colleagues to present this paper and panel presentation regarding our unique undergraduate study abroad program model. I have been in the United States on several occasions to develop and promote our collaborative program but this is a wonderful opportunity to share with you our experiences and I hope that after you hear about our program some of you might want to participate or to develop your own international initiative.

I am the International Dean at Moscow State Agricultural Engineering in Moscow, Russia. Twenty years ago I never imagined that I would have this great opportunity to address such an important audience outside the former Soviet system. However, I would like you to know, despite all of the discussions regarding the former Soviet Union, my life as a faculty member was productive as a scientific engineer and we were solving problems important to agricultural production in our system. Also, my personal life was stable, positive and we were a happy family. Sure, it is true that we did not have all of the material goods that have become common in the past few years. I would hope that I would have the opportunity to share some of my personal experiences throughout the rest of the conference.

You know that this idea of collaboration and cooperation was very popular during the Soviet period. The form of socialism that we had promoted the strong bond between your neighbors, friends and colleagues—as this was a really good way to survive. Now I am glad to see that the rest of the world is catching up to this idea. I will be very happy to tell my colleagues in Russia that socialism is alive and well in U.S. universities.

All kidding aside, the development of our new country “Russia” has enabled the growth of interests from the west and in particular this collaborative study abroad program has been a very positive project for our university. Given that our country was so isolated from the west for so many years, in particular this project has enabled the university to gain information and knowledge from the U.S. Today, we would like to explain how this project has benefited both sides and how we have collaborated to make this an effective model that others could replicate.

The model that we will explain today includes a large number of partners. There have been six U.S. universities, nearly 150 undergraduate students, five graduate students, and more than 30 professors and administrators from both sides. More than 40 Russian farms and 25 international businesses along with the U.S. and Russian Embassies has supported and participated in this dynamic program.

As part of the transformation of the country, we understood that it was important to review our curricula and better understand how our curriculum compared to what was being taught in the U.S. and other countries. To facilitate this process we invited professors from the U.S. to participate in a curriculum seminar in April 1997. In the area of pedagogy, we invited Tom Bruening, from Penn State, Glen Shinn from Texas A&M, and Allan Goecker from Purdue. During this seminar, we invited U.S. faculty to bring students to Russia to participate in

cultural tours as a way to begin building bridges. Penn State was interested in our invitation and a small team of four students and Tom Bruening came to Russia in the summer of 1997 to take part in a one-month cultural program. The Penn State team stayed at the university and the students were introduced to Russian agriculture and culture. We took the students to some of our best farms and enterprises. Part of this agreement was that we would later travel with a small group of Russian students to Penn State. In the fall of 1997, I traveled with three students and a professor to Pennsylvania to better understand the people, culture and agriculture. This initial exchange was so successful that we decided to repeat the process the following year. During these initial stages we developed a very good working relationship and we understood the tremendous benefit our students were gaining, as they were able to see agriculture first hand. It is also important for you to understand that one of the things that we emphasize in our curriculum is the development of language skills. Our students study French, German and English and our students increasingly want to understand English because they understand how important language skills are in the marketplace. When our students were in Pennsylvania, the students were able to give presentation in high school classes and to work with secondary agricultural teachers and gain a tremendous insight to American agriculture.

As a result of the successful two-year cultural program I wanted to develop a joint educational program whereby our students could simultaneously gain U.S. credits and Russian university credits. I believed that this would be beneficial to our students and to U.S. students. Unfortunately we came to understand that it would not be possible for our students to gain course credits at Penn State. However, we also concluded that our students could benefit from studying together. Since it would be impossible for a

larger group of MSUA students to find money to study in the U.S. and it was beneficial for Penn State students to study outside the U.S., we decided that a collaborative educational program at MSAU could benefit both sides.

Allow me to give you a complete description of the program so that you can see how all of the partners worked together to make this program effective. When I was asked to provide leadership for the international minor at Penn State it became very clear to me that we needed to be more aggressive in promoting study abroad programs. The research that I had reviewed indicated that less than 2% of students in colleges of agriculture were taking advantage of the opportunity to study abroad. Having had the opportunity to work in Russia for ACIDI/VOCA, and as a faculty leader for our Participatory Rural Appraisal program in Puerto Rico and my work for the United Nations in China, all indicated to me very clearly to me that both students and faculty could greatly benefit from an opportunity to participate in a study abroad program in Russia. Also, the timing was perfect as there were resources available to work in Russia and to help our students better understand the transformation of Russian agriculture. Given the importance of food and fiber and our role as international educators it seems so logical that we all need more opportunities to meet this critical need in higher education in the U.S. Moreover, study abroad has been increasingly recognized by a number of authors as one of the best ways to internationalize the curricula (Acker & Scanes, 2000; Maidstone, 1995; Platt, 2004). A recent study at the University of Florida by Irani, Place, Lundy, and Friedel (2004) suggested that few agricultural students were interested in study abroad. At Penn State, we replicated this study and found similar results that indicated that less than 2% of beginning college of agriculture students were interested in study abroad (Mamontova & Bruening, 2005). Also, according to the

Chronicle of Higher Education (2000), only about 1% of students that studied abroad in the 1999 school year were agriculture students. Knowing that the critical need exists, the challenge became how to develop a program that could effectively meet the needs of students and overcome some of the natural and artificial barriers that exist in higher education.

As you all very aware, universities want to tuition dollars to continue to flow freely into university coffers. Developing a program that would take tuition dollars away from the university is not a good solution or even a good thing to suggest. Also, it is clear that students want to continue to move towards graduation. They don't want a study abroad program to slow their progress towards graduation. This is especially true in science-based programs. Also, we recognized very early on that administrators don't want professors away from the university for long periods of time. We also believed there was a need for students to work in teams with international students—not just study language in a foreign country with 150 other students. Our model meets all of these conditions and more.

In our program model U.S. students can earn 18 credits from their own institution while studying at MSAU. This is accomplished when universities accept a syllabus and content developed from a professor at another U.S. land grant university. Each course needs to meet a minimum of 45 contact hours—the U.S. standard for three credits (15 classroom hours for one U.S. credit). In our program goal, ten U.S. students spend the spring semester in Moscow as a cohort group studying with ten Russian students. The students work together in teams on relevant Russian and international agricultural problems. The U.S. students gain Russian language before, during and after the program. Russian students are selected to participate based on their ability to speak English and overall fit for the program. As there is a competition to participate in the

program from Russian students, they are voted into the program by their peers. Russian students take all of the classes in English and work on class projects with U.S. students and the courses are graded and classes count toward their graduation. All students earn a certificate of completion.

U.S. and Russian students participate in field trips to better understand the transformation of centrally controlled agriculture to the free market system in the Moscow region. Three U.S. professors travel to Russia each spring to teach a one-month three credit course to the cohort group of U.S. and Russian students. U.S. students cannot pick and choose courses. Students must participate in the complete curricula. Differences have been made to adjust to individual university credit loads. For example, most students in Florida take a load of 12 credits and so each three-credit course became a two-credit course for Florida students. A different U.S. professor travels to Russia in February, March and April to teach for one month. Students also take two Internet communication courses to complete the curricula. U.S. students can also compete for internships in Russian enterprises. To date, students have interned in a Moscow secondary school, Monsanto, Moscow botanical gardens, John Deere, and several have interned at ACIDI/VOCA. Three U.S. students have returned to Moscow for internships after the conclusion of their program and several Russian students have come to the U.S. to study and travel.

MSAU students have benefited in significant ways from this program. First of all it is one thing to study a language and completely another skill level to take courses in the language that you are studying. Our students enter the university in Moscow thinking that they will be English language interpreters. Few really have this high skill level when they leave the university. But to work in an international firm is extremely valuable for our students and to be able to learn from native English

language speakers is a great benefit for these students. Also, the American professors teach using active teaching processes and when our students use this approach it helps their thinking skills and thus this active teaching approach better prepares our students for our domestic workforce. Today more than 11 graduates of this program are working at John Deere in Russia and many more are employed in a variety of jobs where they are using skills learned in the program. In the John Deere positions graduates are able to use their English language skills and engineering and machinery knowledge to really make an impact on Russian agriculture. Also, the salary that they receive is far beyond what they could earn as interpreters or most in most other businesses.

U.S. students are encouraged to participate in a humanities course at Penn State prior to departure to Russia. Each fall semester, all U.S. participant students are encouraged to take Russian 100. This is an Internet-based course that we placed online at Penn State to provide background information about Russian history, culture, and agriculture (non-Penn State students did not pay for these credits). Also, all U.S. students are asked to study Russian 1 (three credits), either at their home institution or as an online course that we teach from Penn State (non-Penn State students did not pay for these credits). Using Polycom (Internet video conferencing) we are able to teach Russian language with an agricultural twist. For example in this program it is important to be able to say, "How many milk cows do you have on this farm?" (in Russian). Both of these courses meet humanity requirements and they provide background information for our students preparing to travel to Russia (Zhai & Scheer, 2001).

Program Support Partners

It is important for you to know that we have been able to gather great university, grant, business support, and parental support to make this program happen. The first

support came from MSAU and Penn State College of Agricultural administration. Through tiny amounts of seed grant dollars (\$2500 per year) at Penn State we were able to host our Russian colleagues during the first two years of the cultural program. Later as we moved to the expanded study abroad program, colleges of agriculture granted students scholarships to travel to Russia (airfare was paid and visa costs). When the National Security Grant was developed (\$420,000), it paid for travel scholarships and visa expenses of students. This grant also paid for the development of the online courses and initially paid for the language instruction. Since the cost of participation (housing and food costs) is less than a typical semester at Penn State, Montana State University, or the University of Florida, students are able to save money while studying abroad. Parents of students also supported the program by allowing their participation. For a number of individuals participation in this was really a leap of faith. For many, Russia is a scary place. Perhaps it really helped a number of parents of Penn State students when I have been able to tell them how two of my daughters enthusiastically participated in the program.

A significant part of the success of the program can be attributed to the large number of partners that have added value, experiences and depth to the educational opportunities for both sides. For example, the program could not have happened without the tremendous support of our partners at ACIDI/VOCA. The management team has seen the value in this program and the impact on Russian student population. Each of the eight years ACIDI/VOCA has supported the participation of the U.S. professors. Leveraging their support was a key factor in obtaining the NSEP grant. Pragmatically it would have been very difficult to develop this program without their enthusiastic support and facilitation.

Developing Trust

The key in developing an effective study abroad program is the trust that must be in place between the partners so that everyone is assured that each side will deliver when it is needed. The first stages happen in the cultural program. Getting visas, buying airplane tickets, getting picked up at the airport, all of these steps created the needed foundation of trust that it became clear that when each side made a commitment to action the needed follow-through would occur on the other end. It takes trust to get on an airplane without a through knowledge of the language and know that you will be completely taken care of after you arrive at your destination. Perhaps more than any other element of the program this is the key to success.

There is another point worth noting and this is the fact that this project is not based on transferring funds to Russia. The focus of the project has always been on learning opportunities for students on both sides. Contrary to many other types of initiatives this project costs a lot to operate in Russia. All of the grant money obtained on the U.S. side only helped the American students.

Coordination

From a coordinators perspective, the strength of this international agriculture experience program has been its synergistic nature. As already stated, the program involved many components that enriched the experience for students and professors who participated. Even though there were many components to the program, the entire program was not difficult to explain to students who indicated an interest in participating. Certainly, the whole of the program was bigger than the components. The design of the program convinced me that it was worth my time to commit to recruiting students and participating as a visiting professor. Without program directors really considering it, experiential learning in a real international context was

at the heart and soul of this program. Gibbs (1988) experiential model gives credence to this assertion from a post hoc perspective. Gibbs provided details of ways in which the experiential learning cycle can be formally implemented, with respect to: planning for experience; increasing the learner's awareness of experience; helping the learner to review and reflect upon experience; and providing substitute experiences where 'real-life' ones are unavailable or inappropriate. Regarding this imitative, Gibb's model fits well within this initiative except for providing substitute experiences where 'real-life' ones are unavailable or inappropriate because this program provided authentic experiential learning in a 'real-life' context where substitute experiences were unnecessary.

MSU's College of Agriculture, like other land grant colleges of agriculture, has set strategic goals to enhance the student learning experience to ensure society-ready and global-ready graduates. Explicit in this goal is the ability of graduates to work effectively and competently in the international community. To enable our students to more effectively compete in the world, we must broaden our concept of the classroom and be inclusive of international networking and active learning that comes with being a partner in global solutions (Mason, Eskridge, Kliewer, Bonifas, Deprez, Medlinger Pallas, & Meyer, 1994). Increasingly, students are being faced with competition in the global market place and a need to have a better understanding of the world economy. It is from this philosophical foundation that participating college of agriculture supported and participated in this international agriculture exchange experience that provided an outstanding set of experiences that allow our graduates compete in a broader context than their home state.

Coordinator's Role in the Program

Montana State University College of Agriculture students have participated in the

MSAU exchange program since 2001. A total of nine Montana State University students participated in the program and two of those conducted internships while in Moscow. Montana is a state far removed from immigration and the world's impact. Montana citizens and its students, in general, are physically and socially isolated from the rest of America and from the world. In Montana many consider this situation a blessing. However, because of this situation, Montana State University students and professors must be proactive in their approach to finding meaningful international agriculture experiences that give them the 'tools' needed to operate in an international setting. This context became a source of motivation for me as coordinator of the MSAU exchange program. A number of Montana State University College of Agriculture students are very aware of their isolation and, therefore, were eagerly looking for an international experience that gives them a unique opportunity to engage in an international experience that had the potential to change them mentally as well as give them a different perspective of the world.

Recruitment of U.S. Students

After the first year, the recruiting strategy mainly involved students recruiting students. The coordinator really became the facilitator when recruiting was in full swing. Former participants were asked to design flyers and post them in key areas across campus. Early in the fall semester the time and location of a "Russian Exchange Seminar" was announced by former participants in College of Agriculture courses with large enrollments. The seminar was far from formal. Instead it was held at a local pizza parlor adjacent to campus where all in attendance were provided with a free meal. Usually ten to fifteen students would attend the seminar. Former participants became very effective recruiters at the seminar, which really evolved into more of discussion of how academics can be

satisfied, tuition, housing, and transportation costs, and travel within Russia itself were addressed. At times, even parents were directly recruited (convinced) by the coordinator and other program staff. If parents were recruited, it was because of their reluctance to allow their child to live in the “Former Soviet Union” for a semester. However, after learning about the benefits of the program, parents became strong supporters of the initiative and a few even traveled to Moscow during their child’s semester abroad.

Once the program was fully explained to potential participants, the “value” of the program became evident. Students were elated to find out that they would pay in-state tuition for their semester abroad. Once parents and students discovered that living costs were equal to or less than Bozeman, Montana and that travel costs would be considerably subsidized, potential students began to see the feasibility of their active participation in the program. To finalize the “deal”, potential participants were given last year’s participant manual that provided plenty of reading material to review and digest. In addition, former participants made follow-up phone calls and visits to answer any questions and provide support.

Professional Development of Faculty

Although the primary focus of this program was the learner, a complementary objective of the program was to enhance collaboration in education among 1862 land-grant institutions. Courses offered to students were taught by a variety of professors, who represented diverse agriculture disciplines at 1862 land grant universities. Professors from The Pennsylvania State University, University of Nebraska, Montana State University, Texas A&M University, University of Florida, and University of Maryland taught a course during this program. Participating professors gained valuable professional development experience through their participation.

To teach a course to students from another country and culture is a worthy undertaking that gives faculty a professional development experience that cannot be realized on their home campus, but was supported by their peers. Professors also need reassurance from peer professors that international teaching and service are excellent experiences that will enhance career development (King & Martin, 1994). Faculty were able to work with Russian students, deliver effective instruction, provide guest lectures, participate in agriculture field trips with students, and begin discussions with MSAU faculty on topics of mutual professional interest. Faculty’s knowledge about Russian agriculture grew while their opinion about their Russian counterparts became more positive. For some participants it was their first international experience and for others, it was their launching pad to delve further into international agriculture teaching and research.

Graduate Student Opportunities

Graduate students in colleges of agriculture often want to participate in an international agricultural experience, but there are many obstacles that a typical graduate student must overcome before agreeing to participate. These obstacles can include lack of funding, setbacks in anticipated graduation date, and helplessness to conduct research. Furthermore, some graduate students are married and may have children; an obstacle that is related but not addressed in this paper. Through this model of cooperation and collaboration, many opportunities were created to remove the above obstacles as well as provide a meaningful internship for graduate students.

This model has allowed graduate students to remain on assistantships while progressing through independent graduate coursework. Funding has been provided through the colleges of agriculture and from outside grants to pay international expenses such as airfare, room, board, and stipends.

Many international agricultural experiences offered to graduate students include one-week study tours or one-year fellowships and exchange programs. However, one-week study tours do not offer the experiences of living and working in another country that aid understanding of the culture and agriculture of another country. A one-year fellowship or exchange program often delay anticipated graduation dates and can be difficult to incorporate into a program of study. This model has allowed graduate students to spend a semester (four months) abroad that provides meaningful experiences of living and working in another country and can be easily incorporated graduate student's program of study.

Conducting research in another country can be challenging as a graduate student with little or no experience. Often there are few initial contacts and little is known until the graduate student actually arrives to the foreign country. However, this program provided numerous agribusiness contacts in Russia. Faculty members, both Russian and American, associated with the program also proved to be excellent resources. There were also opportunities to conduct research in agricultural and life sciences with topics including animal husbandry, food processing, plant science, animal science, and marketing.

Specifically in the Russian-American agricultural study abroad program, the graduate student's responsibilities were to serve as an on-site coordinator and teaching assistant. Particular tasks included helping coordinate field trips, assist visiting American faculty members, coordinate the weekly online newsletter, and grade undergraduate student papers submitted in the international agricultural seminar. The graduate student was still enrolled at the University of Florida taking independent study courses in leadership and international agribusiness as well as research hours. Research conducted by the graduate student during the involvement with this program consisted of the acceptance of biotechnology

by Russian villagers, critical thinking skills of Russian villagers concerning the economy, critical thinking dispositions of Russian students, use of journaling to improve critical thinking skills, and the influence of student's problem solving style and cognitive climate on student achievement. Additionally, through the excellent rapport with John Deere—Russia, the graduate student was able to work closely with John Deere managers to conduct a market analysis of John Deere's participation in the Russian tractor market. The graduate student was able to present the findings to the John Deere—Russia managers as well as discuss organizational change theory regarding leadership styles used in the Moscow office.

Graduate students are a unique group with different obstacles to overcome when considering participation in an international agricultural experience. This model has provided graduate students with unparalleled opportunities and benefits when compared with the one-week study tour or the one-year fellowship.

Developing a Community of Learners

Over the past seven years, the NSEP Study Abroad Program has been successful at developing a cohesive community of active learners. Students who participate in the program are provided with opportunities to interact with other students from as many as six higher education institutions from across the United States, and with Russian students from the Moscow State Agroengineering University. Both Russian and American students interact not only in class, but also in the hostel where they reside during the school semester.

U.S. Student Interactions

Although the program takes place in Moscow, thousands of miles away from home, students have the opportunity to learn more about the United States and the diversity that exists within it. Bringing together students from different universities

from across the nation allows for American students to interact with each other and to develop relationships which are likely to continue once they have completed the program.

These relationships provide many benefits to the American agricultural industry. Those who participate in the program are usually involved in agriculture in their home states. Because the students come from different parts of the country, they naturally tend to be very knowledgeable about agriculture in their area, but have little knowledge about agricultural practices in other states. The benefits of having students from across the nations engage in open discussions about differences and similarities within the industry are significant.

Living arrangements in Moscow provide for interesting and meaningful growing experiences. Because of the nature of the hostel, students from different states and universities end up rooming together for the duration of the program. With a program that lasts an average of sixteen weeks, opportunities for compromise, cooperation, and even negotiation are always available. Living in a hostel with Russian students only adds to the cultural experience.

U.S. to Russian Student Interaction

Interactions between the U.S. and Russian students are a key component of the program. For instance, having two completely different perspectives about agriculture in one classroom can provide for stimulating educational discussions. When you consider the fact that American students come from all over the country, and that Russian students come from many different regions of Russia, you are guaranteed more than just two different perspectives on issues.

American students also have an opportunity to travel to a Russian classmate's household to spend a couple days with the student's family. This is typically an eye-opening experience that

both the Russian and American students tend to enjoy the most. When American students leave the capital of Moscow to see what life is like in villages sometimes hundreds of kilometers away from the city, they come back with a much greater understanding of the Russian culture. After the experience, students tend to be more sensitive and willing to embrace the Russian way of life, regardless of how different it may be from their own.

The focus of this project was and is on education and how to make our students global graduates that can work effectively in a dynamic and ever-changing world. Clearly future graduates will be able to work effectively across languages and cultures to meet the needs of clients and business interests. As international educators we need to redirect our efforts to find ways to replicate this collaborative study abroad program to other countries and to provide more opportunities for students to engage in international study abroad opportunities. In a recent Internet article Lorenz (2006) indicated that bilingual language skills are the hot new skill to make our graduates more employable. Certainly Spanish language was the most important language to obtain, but Russian was one of the three languages mentioned in the article as a skill that will help graduates obtain employment. Colleges of agriculture have the unique opportunity to use our food and fiber system as a universal path to collaborative partnerships. We just need to find new creative ways to make this happen. As we move forward, we ask you to consider joining our program in Moscow to enhance your students' careers and future employment opportunities.

References

- Acker, D., & Scanes C. G. (2000). A case for globalizing undergraduate education and student learning at colleges of agriculture. *Journal of International Agricultural and Extension Education*, 7(1), 47-51.
- Gibbs, G. (1992). *Learning by doing: A guide to teaching and learning methods*. Oxford, England: Further Education Unit, Oxford Brookes University.
- King, D. & Martin, R.A. (1994). Infusing a global perspective into the college of agriculture curriculum: Topics, activities, and problems. *NACTA Journal* 38(2), 39-42.
- Irani, T., Place, N., Lundy, L., & Friedel, C. (2004). Experience, perceptions, and likelihood of participating in international opportunities among college of agricultural and life science students. *Proceedings of the 20th AIAEE conference, Dublin, Ireland*, 273-283.
- Lorenz, K. (2006). *Do you have today's hottest skill? Bilingual job candidates are in demand*. Retrieved April 9, 2006, from <http://msn.careerbuilder.com/custom/msn/careeradvice/viewarticle.aspx?>
- Maidstone, P. (1995). *International literacy: A paradigm for change: A manual for internationalizing the curriculum*. Victoria, BC: Centre for Curriculum, Transfer and Technology.
- Mason, S.C., Eskridge, K. M., Kliewer, B., Bonifas, G., Deprez, J., Medlinger Pallas, C., & Meyer, M. (1994). A survey: Student Interest and knowledge of international agriculture. *NACTA Journal* 38(2), 34-38.
- Mamontova, N., & Bruening, T. (2005). Undergraduate students' perceptions of internationalization and international involvement activities. *Proceedings of the 21st AIAEE conference, San Antonio, TX*, 324-334.
- Platt, N. (2004). *Make global skills a top priority*. USA Edition of the Financial Times Limited. London, England.
- The Chronicle of Higher Education. (2000). *Snapshot of report on study abroad programs*. Retrieved January 8, 2003, from <http://chronical.com/cgi2-bin/printable.cgi?article=http>
- Zhai, L. & Scheer, S. (2001). The influence of international study abroad programs on agricultural college students. *Proceedings of the 17th AIAEE conference, Baton Rouge, LA*, 376-382.

**Exploring Youth Development Workers in the Process of Civic Youth Engagement in
Trinidad and Tobago**

Nicole Webster

The Pennsylvania State University
323 Agricultural Administration Building
University Park, PA 16802
E-mail: nsw10@psu.edu

Wayne Ganpat

Ministry of Agriculture, Land and Marine Resources
St. Clair Circle, Port of Spain
Trinidad, West Indies
E-mail: waygan@mail.tt

Abstract

The purpose of this paper is to explore the concept of civic youth development within the wider context of Caribbean youth, specifically in Trinidad and Tobago. It is important to understand youth development from this perspective given the critical social and developmental changes within the Caribbean. A qualitative research methodology was used to examine these issues. Eighty-two adult youth development workers from across the country were asked a series of questions on their knowledge and understanding of civic engagement, barriers to involving youth in community activities, and what they feel motivates youth to participate. Data collected were analyzed using the NVIVO statistical software. Several themes emerged for each question in the data set. These included creating positive civic experiences, teaching youths to be good citizens, empowering youths, engaging youths in community activities, adult mentoring, parental and community involvement, generation gap, time and social constraints, incentives, adult involvement, and youth participation. The results provide a foundation upon which a model can be built for the full engagement of young people in programs and activities that can impact positively on their quality of life.

Keywords: Adult, Agriculture, Civic Engagement, Trinidad and Tobago, Youth Development

Introduction

An estimated 15% of the labor force in the Caribbean region is unemployed and of this 15%, there are 204,000 persons between the ages of 15-24 years (Brown-Chen, 1996). It has been reported that while Caribbean youth are generally happy and healthy, there are several factors present that have the potential to derail the process of positive youth development and engagement (World Bank, 2000). Some of these issues relate to unsustainable programs meant to provide quick fixes, use of the region as a trans-shipment mission point for drug trafficking, slow implementation of national youth policy, and expanding commercialism (Lewis, 1994; Mills, 2006; Nowak, 2001; Palmer, 2003; World Bank, 2000). Regional governments have recognized this looming problem and several short-term relief programs have been organized (Alexis, 2002). Most Caribbean countries have set up youth desks and departments in government, assigned public resources for youth and funded special programs for youth. However, in spite of these efforts, youth continue to be at serious risk because of underemployment and unemployment and this is evident in a rising tide of anti-social behavior: an upsurge in criminal activities, increased drug use and higher incidences of teenage pregnancies associated with these disengaged young people (Gupta, 2000; Singh & Mustapha, 1994).

Regionally, many of the programs which seek to develop the potential of young people often propose agriculture as a vehicle for their employment and transformation (Maximay, 1996; Seepersad, 1994). The reality is, however, that agriculture in the region is in steady decline with falling prices for traditional commodities, loss of preferential markets, severe demands on the sector to comply with multilateral and bilateral trading managements and a host of other domestic problems (Ganpat & Bholasingh, 1999). Other areas, focused on the development of youth in the region, must be explored at the same time.

Regardless of the programs being contemplated for young people, the key issues that impact the full engagement of youth must be understood. One of the several ways to elaborate these issues is to tap into the knowledge and understanding of those adults who interface with youth on a regular basis. The information generated can be used to develop civically engaged programs that enhance the well being of young people (Betts & Norquest, 1995).

Purpose

The primary purpose of this paper was to examine adult youth workers' understanding of civic engagement. The study also investigated the motivational factors associated with participation in civic activities and adults' knowledge of the barriers to implementing such civic activities with young people in Trinidad and Tobago. There is a pressing need to understand these issues from this perspective given the critical social and developmental changes taking place within the Caribbean and the restlessness of the young people. As youth become active members of society, it is crucial that they understand their role and the power they have as change agents within their own communities (Hoover & Webster, 2004). When adults engage youth in their communities, young people gain a greater awareness of opportunities and the potential impact they have on changing their current quality of life.

Methodology

The qualitative research was guided by an interpretative theory which grounds the researchers in the context of the participants and helps to understand phenomena through the meanings that people assign to them. Interpretive research does not predefine dependent and independent variables, but focuses on the full complexity of human sense making as the situation emerges (Kaplan & Maxwell, 1994, p. 65).

Participants for the survey were targeted from workshops held during countrywide fall meetings on engaging youth participation in existing programs. The 82 participants were recruited because of their direct involvement in youth organizations that engage young people in positive activities throughout Trinidad and Tobago.

Prior to the start of the workshops, participants were informed by the researchers that they would have the opportunity to participate in a voluntary survey. They were instructed that their decision to participate would require an extra 15 minutes of their time after the workshop. Individuals who chose to participate were instructed to stay seated at the close of the workshop in order to have an accurate count of the voluntary participants. Confidentiality and anonymity were guaranteed, and the participants were assured that if they wished to stop taking the survey at any time, they could do so. The researchers had minimum contact with the participants during the workshop in order to not interfere with participants' potential responses on the survey.

The survey was developed by researchers at Pennsylvania State University and a Director at the Ministry of Agriculture, Land and Marine Resources. In order to test for content validity, the survey was given to a panel of experts who work in youth development in Trinidad and at Penn State University. The survey was administered by two workshop facilitators identified by the Ministry of Agriculture, Marine and Land Resources. It consisted of seven open-ended questions which were used to gather the most comprehensive data and to assist with the formation of interview questions that would be used in subsequent field research (Denzin & Lincoln, 2000). Participants responded to open ended questions to assess their knowledge and understanding of civic engagement, the factors that motivate adults to participate in civic activities, and to elicit the barriers to

implementing civic activities with youths throughout Trinidad and Tobago.

The researchers used content analysis to interpret the data. The statistical software package, NVIVO 2.0, assisted the researchers in analyzing the qualitative data in a constant comparative method and to ground the meanings that people assigned to particular activities and experiences in a flexible coding and analytical manner (Brown, Taylor, Baldy, Edwards & Oppenheimer, 1990; Crowley, Harré & Tagg, 2002; Glaser & Strauss, 1967). This qualitative software package allowed the researchers to code data, examine themes across the data set, and look for patterns in responses. The researchers used a qualitative technique to analyze data which included taking notes, summarizing responses, developing categories, and sorting information to develop sub-themes. Colleagues in the department were responsible for reviewing the process and verifying results.

In this study, the researchers established credibility through triangulation, peer debriefing, and reflexive journaling. The researchers used thick description in the reporting of respondents' thoughts and ideas relative to the research questions and purposive sampling to establish transferability. Researchers had debriefing meetings throughout the study to ensure accurate descriptions and content analysis. An audit trail and journaling were used to establish dependability and confirmability. Using the above mentioned techniques as a part of the methodology of the study established trustworthiness.

Results

Sample Description

A demographic profile in Table 1 shows that more than one-half (59.8%) of the 82 respondents were female employees either in the school system or in the agricultural extension field. A small percentage of the total number of respondents (25.6%) had worked in

extension over 20 years and classified themselves as “a seasoned extension employee.” Eighty-one percent were employed in Trinidad and 29% were employed in Tobago.

Table 1

<i>Demographics</i>	
Variables	Percent
Gender	
Female	59.8
Male	31.1
Non Response	9.1
Years of Service	
1-5 years	29.3
6-10 years	18.3
11-15 years	9.8
16-20 years	2.4
20 years or greater	25.6
Non Response	14.6

Issues in Youth Development

Understanding Civic Engagement.

The first question explored adults understanding of civic engagement. It revealed four specific themes among respondents. Adults felt that civic engagement 1) created positive civic experiences for youth, 2) taught youths to be great citizens, 3) empowered youths to get involved in their community to create change, and 4) engaged youths in community activities to build pride, patriotism, and self esteem. Youth workers gave a variety of responses that supported the creation of these themes.

Theme 1: Creating Positive Civic Experiences

This theme was supported by responses such as,

- [Civic engagement is] *a meaningful and purposeful way to create positive experiences for youth—to stimulate their minds, provide service for others to be responsible and interactive with others.*

- *This is the process whereby the youth are positively encouraged to participate in learning activities geared toward both their personal development as well as the consideration of the variables and circumstances, etc. which would influence the person[’s] ability and willingness to learn.*

Respondents felt that civic engagement should involve youths and adults working together in communities, neighborhoods, and clubs to create mutual positive experiences. They supported the idea that positive experiences spanned across the entire society. Activities should include social, cultural, spiritual, and educational aspects of life across the country.

Theme 2: Teaching Youth to be great Citizens

The second theme was supported by comments from respondents that centered on building citizenship activities and programs. A comment by a male respondent, who was involved in a current after school program, is noteworthy.

- *Civic engagement is participation/involvement in programs/activities that would build civic responsibility, patriotism, etc.*

Citizenship was considered to be pride in oneself and one’s country, neighborhood, school, and church. Adult volunteers responded that without citizenship, youth will not know what it means to be part of a positive society. Other respondents suggested that youths should be involved in programs that promoted citizenship and inculcated a sense of cultural and ethnic pride. Citizenship meant that youths were responsible for the development and maintenance of their communities and worked collaboratively to achieve this goal. Individuals also felt that civic engagement

was about programs that taught youths about what it means to be a good citizen.

- *Civic engagement is to get [youths] involved in activities which would make [them] grow- both in courage [and] knowledge.*
- *Civic engagement is the continuous involvement of community and youth to improve youth's education and socialization skills.*
- *Effectively communicating with young people and getting them interested to become united in meaningful activity for people and development and eventually raising their standard of caring.*
- *Meaningful and purposeful intent to create experience for youths. Stimulation of their mind. Enhancement of critical thinking skills. It is also the involvement of youths in community activities.*

Theme 3: Involvement in Community for Change

The third theme of the importance of community change was expressed through a variety of comments. Each of the comments reflected the need for civic engagement to help young people engage in meaningful activities in their communities throughout the country. For example one respondent described civic engagement as a way for “youths being involved with other communities and not in one stable community throughout the country.” They noted that it was important for youths to help others, not just themselves. This was seen as a way to give back to others and build on the idea of good citizenship. The comments below which discuss the notion of community building and citizenship are instructive:

- *I think that youth civic engagement is things that youths should be doing to make an input in society.*
- *[Civic engagement] is engaging youth in activities which would allow*

them to participate in community building and self development.

- *[Civic engagement] is to do something for your community.*
- *Participation of youths in various programs. A way or method of getting youths to do more within their community or club.*

Theme 4: Engagement to Build Pride, Self Esteem and Patriotism

The fourth theme which focused on engaging youths in community activities to build pride, patriotism, and self esteem was built on the comments that centered on self-esteem and sense of pride. For example, one respondent commented that, “[youth civic engagement] is community service with a view to develop a sense of pride and responsibility toward their community.”

Other comments which echoed this response were:

- *Getting youth involved in community/national projects that promote development of self and community and ultimately promote positive self sufficiency.*
- *[Civic engagement] is [youths] learning about their country and community and helping to promote and improve them both.*

Adults commented that civic engagement was a way to encourage youths to be proud citizens through their good works. It was not enough to just be a citizen of Trinidad and Tobago, but rather a person who was well-balanced, caring and capable of working with others to build and maintain a healthy society.

Barriers to Youth Involvement in Community Programs

The second question explored adults' knowledge about the barriers faced in getting youth involved in their community. The overwhelming majority of participants (75%) responded that there were definite barriers and difficulties in involving youth in

their communities. Five themes emerged as barriers for adults who worked with youth—lack of adult mentoring, lack of parental and community involvement, generation gap, time and social constraints and lack of incentives (lack of appeal).

Theme 1: Lack of Adult Mentoring

The lack of adult mentoring seemed to be the major concern cited throughout the responses. Adults commented that difficulties generated from the lack of “good adult mentoring” and “no one taking responsibility for guiding youths.” Other adults commented on the need for motivational leaders to engage youth and to “guide their energies and skills in the right direction.” One adult suggested that adult mentoring was the ability of adults to look at youths as valuable persons with experiences and knowledge to give in programs. This was echoed by the comment:

- *[Youth] feel a sense of distrust since they are accused by adults. If they genuinely trust an adult that makes them feel good about themselves, then they respond.*

Theme 2: Lack of Parental and Community Involvement

This theme emerged from comments and ideas around the limited participation of parents and community members in the lives of youths. For example, several respondents commented on the environment and the lack of support from the home and parents. This was further supported by the comments about the lack of motivation that centered on parents and their involvement in their children’s activities. One participant stated that due to the lack of approval by parents, it was difficult to motivate youth in community activities.

Theme 3: Age Differences

The differences in ages between the adults and the youths surfaced as a theme in this section. Respondents commented that due to the age difference between youth

participants and adult mentors, the youth were less inclined to become involved in programs. This “generation gap” as it is referred to locally, created a perception that “adults do not understand youths.” Other comments suggested that some youth were not respected by some adults. This was illustrated in the following responses:

- *Yes, it is difficult for youth to get involved in their community. Youth are not taken seriously. Youth believe that they are not respected by adults.*
- *Because of the way older folk approach things that concerns them and the way the older folks respond to questions [and situations differently] young people find it difficult to relate to them.*

Respondents felt the “generation gap” as defined by the local culture between adults and youth was the cause for a lack of respect and interest in working with older people. This was a problem individuals felt would continue to be problematic until addressed by adults and youth alike.

Theme 4: Time and Social Constraints

The work and school schedules of individuals as well as peer pressure helped create the theme, time and social constraints. First, adults expressed that young people’s time is limited due to their academic studies and work. They felt the pressure of academics deterred youth from becoming involved in community activities. One respondent supported this idea with the following comment, “...because of the tremendous number of distractions and the fact that they must focus on studying for academic excellence [youth are not involved in our programs].” Other adults also discussed the need for youth to do well in school because of pressures from parents and other members of the community. In addition to these issues, adults also expressed other social pressures faced by youths that inhibited involvement. A social

constraint, namely negative peer pressure, was a major problem voiced by the respondents. Peer pressure originated from other peers, television, cultural influences, and technology. These problems were expressed in the following comments by respondents:

- *American cultural influence, cable TV, video games, inhibit youth from community activities.*
- *It [youth community involvement] depends on the community. If drugs are prevalent there is the lure of easy living.*
- *It is difficult for some youth to get involved in their community because of peer pressure- cannot socialize and other social problems.*
- *If they [youth] are not up to standard with others (peer, academic, etc.) they might not be accepted by those who are involved.*

Theme 5: Lack of Incentives

Adults felt that there was an overwhelming lack of enthusiasm by youth to participate in community activities. They felt this was due to the lack of incentives and rewards offered in programs. Respondents expressed the need for greater stimuli by adults, financial rewards, and more appealing choices of activities. Adults also felt that if youth had a greater variety of choices in the programs, they would be more inclined to stay involved. Incentives and rewards would not only attract youth, but keep them interested over a longer period of time.

Motivating Youth Participation in Community Activities

Motivation to assist young people in becoming civically involved in their communities and neighborhoods was a key concern of the adults surveyed. The two major themes that developed from this question were (1) adult involvement and (2) youth participation.

Theme 1: Adult Involvement

Several respondents expressed the need for adults to be more involved in the lives of young people through volunteer activities and community programs. They stated that more opportunities needed to be created for adults' engagement, through governmental sponsored programs, churches, school programs, and community organizations. Adults discussed the need for an organized approach to involvement of youth through collaboration and group activities involving both adults and youths. For example, one respondent stated that "*by being more accepting of our young persons and including them in planning activities, and by guiding them, encouraging them to get involved and by asking their opinion and acting on it [adults assist in young people's involvement in neighborhoods and communities].*"

Adult involvement also included the serious engagement of youth working on the planning and implementation of programs. Although this was a relatively new concept, adults felt this was a needed approach in order to have maximum participation of youth in community programs. Several comments supported this type of involvement as noted below:

- *Adults need to volunteer their time and knowledge in the project-- that will elevate the youth.*
- *By finding out the needs of the youth in the community [one can] get them to help in the planning of the projects [and get] them to work in the implementation of the program.*

Other adults also commented that motivating youth would come from constant communication and positive participation by the adult. Any efforts to promote youth participation would need to tap into the knowledge and expertise of a variety of adults in various communities. Programs and workshops for community leaders using the resources available in schools and other

learning institutions were suggested as ways to support adult leaders across the country.

Theme 2: Youth Participation

The second theme, youth participation, emerged through the comments that reflected the voice of youth in community programs. Adults felt that the best motivating factor was allowing the youth to be active and vital members of the programs. Moving away from the traditional concept of being seen and not heard, adults felt that youth should have an active role and voice in community activities and programs. This could be developed through trust, building up the youths' confidence, involving them in the planning process, asking their opinions, incorporating their personal experiences in the programs, making them role models, encouraging them to make valuable decisions, and accepting them as members of the community planning team. One respondent expressed that adults should, "*give youths a voice that can be heard. Many adults do not allow youths to give an opinion therefore their involvement is very rare.*"

Adults understand that they play a vital role in facilitating the youth voice process. As expressed by one respondent, "*First and foremost- create a forum for both teens and adults to talk, talk, talk, and then one can organize relevant programs.*" The majority of respondents said that adults needed to be responsible for the development of youth through a variety of strategies. Some felt that it was through direct interaction and involvement, positive mentoring, holistic participation, and listening. Others felt it was through joint programming efforts between adults and youth such as youth and adult partnerships or teen boards. Based on the range of examples provided in the data set, it was understood that Trinidad and Tobago adult youth development workers felt that youth must be a part of the process in order for significant changes to occur in motivating

young people to become involved in civic activities in their communities.

Discussion

According to the 2020 Vision plan set forth by the Trinidad government, by the year 2020, Trinidad citizens will be, "a united, resilient, productive, innovative and prosperous nation with a disciplined, caring, fun loving society comprising healthy, happy and well-educated people and built on the enduring attributes of self-reliance, respect, tolerance, equity and integrity..." (GORTT, 2005). This extensive plan suggests that individuals take a proactive role in creating a sustainable government, society, and people. By creating the foundation for a more holistic society, the government has urged individuals to be a catalyst to these changes in behaviour and actions.

As is suggested by the comments from the participants in this study, adults realized their role in the quest for creating a safe and nurturing environment for themselves and the generations to follow. They suggested that they play a vital role in the social and civic development of young people within their country, but were not always a part of the solution. This could be attributed to the current role of policies and programs geared towards youth development. Programs which are inclusive of youth voice, active participation of adults, and demonstrate a clear vision for positive youth development is the model that is believed to be the best fit for addressing the youth population. This model could also serve as a template for government organizations, schools, and other agencies that work with youth populations across the country.

Participants shared that the concept of "citizenship" was not a notion common to youth in Trinidad and Tobago. This could be due to a lack of understanding or general naivety by the youth population. If citizenship is not a concrete idea taught in the general society, youth may have a

difficult time understanding the concept. In this context, civic engagement could be reinforced through youth programs and modeled by the adults. By encouraging youth and adult interaction, there is a greater chance for youth to gain awareness and understanding of citizenship.

The adult/youth model also provides an avenue for youth and adults to work together to address local and national issues. The ability for youth to work with adults provides a foundation for cooperative learning and respect. It allows youth to gain a greater understanding of the adults in their communities and in other areas of society. More importantly, youth are exposed to the structure and leadership of organizations which serve as fundamental agencies within their local communities. Youth exposure and interactions within these institutions provides them with an understanding and a base for how they operate and provide services to the citizens of the country.

Adults felt most of the youth of the country were disengaged individuals who were not necessarily involved in meaningful activities. Perhaps with a better understanding of their role as citizens, youth's apathetic attitude could be reversed. Youth who understand their role in the greater fabric of society could be more productive and engaging citizens. In the context of Trinidad and Tobago, civic engagement could serve as a tool which could positively engage youth in the cultural, social, and spiritual fabric of life.

Respondents expressed that civic engagement should be an integral part of the society. Inclusion of these types of concepts helps to create positive experiences for both youth and adults. Building a society of individuals who understands and values civic engagement, could in turn, reduce some of the noted barriers expressed by adults. Several of the mentioned barriers to engaging youth were issues that could be addressed through behavior and attitude changes. If parents and youth were part of a system that incorporated civic activities and

promoted activities for civic engagement at all levels, youth development workers would be able to work cooperatively with parents and their children. They would also have a better connection with the youth in spite of an age difference. An inclusionary spirit of civic engagement from the family would also promote community pride and patriotism thereby assisting in the creation of an engaged youth population. This would also assist youth development workers in incorporating activities that they deem as important and necessary to the mental, social, and psychological development of youth in Trinidad and Tobago.

Conclusion

Based on this study, several pertinent areas related to the role of youth development workers in the process of civic engagement have become clearer and highlight the critical role they play. In the context of changing the Caribbean social landscape, youth development workers signal the need for alternative forms of engagement. Providing alternative mechanisms for engagement to youth development workers in Caribbean countries will broaden their context of learning and allow them to assist in the development of youth across all walks of life. The several themes distilled from the responses to the questions investigated in this study point to key critical areas that must be addressed if a solid foundation is to be built for the full engagement of young people. Concepts such as the promotion of citizenship and empowerment along with genuine dialogue with young people can serve as good entry points to start dismantling several barriers to participation identified. Also, the several actions which promote full participation of youth will certainly go a long way toward building a new culture of full youth engagement. As youth gain a greater sense of ownership and pride in themselves and their programs, they will begin to become integral parts of the society and add to the

civic richness found throughout Trinidad and Tobago.

It is now also evident that youth development workers across the country will need greater training and understanding of their role in this process. They must be familiar with the models that can be used to engage youth; models that have proven successful in other Caribbean and Latin American countries. These include service learning and experiential models. By bringing greater awareness to these individuals, they will have a more realistic view of their role and the potential they have for making a larger impact on the lives of these young people.

Implications for Youth Development in Trinidad and Tobago

The restlessness of young people in the region together with high unemployment and unproductive time on their hands constitute a recipe for trouble. Providing interactive and engaging educational programs for these youth is part of the solution to this looming problem. It appears that most of the issues brought to the fore as a result of this investigation can be addressed through education, not only for young people, but also for adults who work with them. Such educational programs can help in all areas of youth development, but can provide the agricultural sector with a new breed of young persons so urgently needed to reverse the rising tide of antisocial behaviour.

The results from this study will serve as a guide and conversation piece for individuals who work with youth. By understanding the implications for youth engagement, adults may have greater success in connecting youth to a variety of programs that will build communities and individuals. For this to happen however, adults need to be grounded in the concepts and practices of youth development if they are to shape young persons for now and the future. When adults fully understand the implications for youth engagement, they will

have success in programs conducted on their behalf.

In order to capitalize on the strengths of existing programs and create more sustainable programs, the agricultural field would seem the most likely programmatic area to develop. Agricultural programs have received funding and widespread support for creatively developing several facets of life for Trinidadian youth and adults, but there is a need still to expand programs in the future. Newly created programs would need to focus on areas identified in this study such as building youth confidence, self esteem and entrepreneurial spirit. This could have the effect of deepening youth's understanding of their role and function in society. Furthermore, it can help create a class of young people who are striving to create a positive change not only for themselves, but the country and region at large.

Acknowledgement

The authors thank the National 4-H Leaders Council of Trinidad and Tobago for their participation in this research.

References

- Alexis, A. (2002). *Youth Development in the Caribbean Countries Concept Paper*. Mona, Jamaica: University of Technology Jamaica.
- Betts, S. C., & Norquest, J. L. (1995). Creating partnerships: The Zimbabwe-US community youth development model. *Journal of International Agricultural and Extension Education*, 2(1), p. 53-58.
- Brown, D., Taylor, C., Baldy, G., Edwards, G., & Oppenheimer, E. (1990). Computers and QDA—can they help it? A report on a qualitative data analysis programme. *Sociological Review*, 38(1), 134-150.

- Brown-Chen, C. (1996). *The employment Problem in CARICOM Countries: The role of Education and Training in its Existence and Solutions*. Georgetown: CARICOM Secretariat.
- Crowley, C., Harré, R., & Tagg, C. (2002). Qualitative research and computing: methodological issues and practices in using QSR NVivo and NUD*IST. *International Journal of Social Research Methodology*, 5(3), 193-197.
- Denzin, N., & Lincoln, Y. (Eds.) (2001). *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.
- Ganpat, W., & Bholasingh, D. (1999). Attitudes of Farmers toward Farming in Trinidad. *Journal of International Agricultural and Extension Education*, 6(3), 33-38.
- Glaser, B., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.
- Government of the Republic of Trinidad and Tobago (GORTT). (2005). Vision 2020 - Republic of Trinidad and Tobago. Retrieved July 17, 2005, from <http://vision2020.info.tt/>
- Gupta, G. R. (2002). *Vulnerability and resilience: Gender and HIV/AIDS in Latin America and the Caribbean*. Washington, DC: International Center for Research on Women (ICRW).
- Hoover, T., & Webster, N. (2004). Modeling service learning for future leaders of youth organizations. *Journal of Leadership Education*, 3(3), 58-62.
- Kaplan, B., & Maxwell, J. A. (1994). Qualitative Research Methods for Evaluating Computer Information Systems. In J. G. Anderson, C. E. Aydin & S. J. Jay (Eds.), *Evaluating Health Care Information Systems: Methods and Applications*, (pp. 45-68). Sage, Thousand Oaks, CA: Sage.
- Lewis, D. E. (1994). Nongovernmental Organizations and Caribbean Development. *Annals of the American Academy of Political and Social Science*, 553, 125-138.
- Maximay, S. (1996). Responding to shifting paradigms in Caribbean agricultural training delivery. *Journal of International Agricultural and Extension Education*, 3(2), 75-76.
- Mills, O. (2006). Are Caribbean youth in a crisis? *Caribbean Net News*. Retrieved April 30, 2006, from <http://www.caribbeanetnews.com/cgi-script/csArticles/articles/000013/001387.htm>
- Nowak, B. (2001). Keeping it better in the Bahamas. A nation's socioeconomic response to juvenile crime. *Journal of Black Studies*, 31(4), 483-493.
- Palmer, R. (2003). Telecommunication, commercialism, and boundary crossing: The impact on youth and families in Trinidad and Tobago. *The Journal of Negro Education*, 72(4), 495-506.
- Seepersad, J. (1994). Improving agricultural extension through a systems approach: Lessons from the Caribbean agricultural extension project (CAEP). *Journal of International Agricultural and Extension Education*, 1(2), 22-28.
- Singh, H., & Mustapha, N. (1994). Some factors associated with substance abuse among secondary school students in Trinidad and Tobago. *Journal of Drug Education*, 24(1), 83-93.
- World Bank. (2000). *Trinidad and Tobago Youth and Social Development: An Integrated Approach to Social Inclusion*. (Report No. 20088-TR). Washington, D.C.: World Bank.

**Beliefs, Attitudes, Perceptions, and Barriers toward International Involvement among
College of Agriculture and Life Science Students**

Tracy Irani, Associate Professor
Department of Agricultural Education and Communication
Institute of Food and Agricultural Sciences/University of Florida
213 Rolfs Hall/PO Box 110540
Gainesville, FL 32611-0540
E-mail: tai@ifas.ufl.edu

Nick T. Place, Associate Professor
Institute of Food and Agricultural Sciences/University of Florida
219 Rolfs Hall/PO Box 110540
Gainesville, FL 32611-0540
E-mail: nplace@ifas.ufl.edu

Curt Friedel, Graduate Student
Institute of Food and Agricultural Sciences/University of Florida
305 Rolfs Hall
Gainesville, FL 32611
E-mail: cfriedel@ifas.ufl.edu

Abstract

A study was conducted to assess perceptions of potential barriers that might affect students' perceptions and likelihood of participating in international learning at the University of Florida's College of Agricultural and Life Sciences. To conduct the study, an 89 item web-based questionnaire was randomly sent to a sample of undergraduate and graduate students. In all, 256 students responded, for a response rate of 34%. Results showed that the most relevant barriers toward participating included concern about financial costs and overall time involved. Their ratings of a set of attributes related to skills possessed by students involved in international activities was above average, while their rating of the degree to which they possessed the attributes was in the average range. Areas which showed a substantial difference between importance and possession of attributes included "knowledge of the humanitarian issues between the U.S. and other countries," and attributes relating to exports, marketing and humanitarian issues. Perceived barriers was the most significant predictor of intent and perceptions toward international participation, followed by the perceived degree of importance of a set of attributes typically possessed by students who have engaged in an international experience. Based on these findings, possible strategies that may mitigate potential barriers and enhance students' willingness to participate in internationalization efforts might include focusing on educating students about specific attributes that may result from international experiences, as well as publicizing and promoting those "student success stories" where this effect is illustrated.

Keywords: International Experience, International Involvement, Students

Introduction

It is common knowledge among those in the academic realm that there are myriad advantages for students who have great global perspectives and competencies. Employers who are hiring graduates from colleges of agriculture expect that these new hires should have knowledge, skills and understanding that will equip them for today's global workplace. Graduates should be able to work with diverse cultures and people, as well as work productively in heterogeneous teams. They should have a good grasp on issues and events that affect things throughout the world.

Unfortunately, in many cases, students do not have the global knowledge, understanding and skills that employers would truly like to see. In a study to assess students' knowledge and attitudes about international agricultural issues "only 5% achieved a passing score in a knowledge assessment about agricultural policies, products, peoples, and cultures" (Wingenbach, Boyd, Lindner, Dick, Arispe, & Haba, 2003, p. 25). Within this same study, these students felt that the international news stories on TV were most influential on their attitudes, and they minimized the opportunities for interaction with international agricultural exchange students.

Colleges of agriculture have been searching for ways to better integrate an international component into the tripartite mission of research, teaching and extension (Acker, 1998 & 1999). It is very apparent, however, that there is still much to be done in regards to internationalizing colleges of agriculture, based upon a review of literature focused on the internationalization of agricultural education and related disciplines. In their review, Moore and Woods (2003) reported the following major findings: a) internationalization of agricultural education programs has positive effects on college students, university personnel and stakeholders; b) the internationalization of programs has been

limited in scope; c) the internationalization of programs is a response to and a reflection of globalization; and d) effective teaching and learning in this regard requires a global classroom – where cultural differences can become familiar.

In a study related to international participation, Andreassen (2003) found that there were a number of external and internal barriers affecting personal involvement. Among the external reasons cited were: lack of administrative support, interference with tenure, lack of time, financial constraints, lack of language skills, conflict with classes and lack of opportunities. Internal reasons included: fear of different cultures, ethnic prejudices, cultural biases, lack of desire, not being able to communicate, fear of political unrest, a "sense of American superiority," and a fear of lost opportunities while one was away.

There is great value for students who participate in international experiences and courses, and sometimes this does not become evident until the student has had time to process and reflect. Bruening and Frick (2004) found that participation in internationally focused courses helped to create a possible environment for learning about international agriculture, it helped them understand different cultures, and in some cases, it helped them develop interest in studying foreign languages. Moreover, Bruening and Frick found that international experiences helped students to recognize narrowness of previous perceptions and understandings, in addition to broadening overall experiences, understanding world markets and developing self confidence. Similar findings relating to improved perspectives and self-confidence were reported by Zhai and Scheer (2002) among students who participated in international study abroad programs.

Bruening and Shao (2005) utilized a Delphi study of AIAEE members to identify appropriate content and methods for international agricultural undergraduate courses. The primary topic areas for

inclusion were: role of agriculture in economic development; globalization and the implications/affect on agriculture; the role of culture in agricultural international development; differentiating developed and developing countries; importance of world-view; and agricultural and extension systems in different countries. Primary instructional methods focused on experiential learning; presentations including dialogue with those who have international experience; field trips or studies of one to three weeks to diverse agricultural practices; internships; and, international field trips.

In the University of Florida Strategic Plan (2002), internationalization of the campus and the curriculum was identified as one of the primary focus areas. This effort was designed to extend to undergraduate and graduate students as well as faculty. The College of Agriculture and Life Sciences (CALs) responded to this campus-wide initiative by naming a faculty member to lead these efforts, beginning an international minor and certificate program and expanding study abroad opportunities.

If the university is able to make significant headway in this regard, it will help make it one of the premier institutions that prepare its graduates for careers that are more globally focused. However, how ready are its students to participate in international programs and activities? What do they know about opportunities available to them, and do they perceive potential barriers to their ability to engage in these endeavors? What are the factors that have most relevance in terms of students' perceptions of and willingness to participate in internationalization efforts?

In an attempt to understand how agricultural experience may be related to interest in international learning programs and activities, a previous study was conducted (Place, Irani & Friedel, 2004) among undergraduate and graduate students in the College of Agricultural and Life Sciences (CALs) at the University of Florida. Results indicated that, in general,

agricultural students have limited international backgrounds and experience with respect to international learning opportunities. Nevertheless, the level of interest in participating and willingness to travel to other regions of the world to engage in international activities was fairly high.

Purpose and Objectives

The purpose of this study was to follow-up a study conducted in 2003 among University of Florida's College of Agricultural and Life Science students, assessing their perceptions of international involvement with a new data collection effort designed to develop a better understanding of the potential barriers that might affect students' perceptions and likelihood of participating in international learning opportunities available to them while still in college. As such, the objectives of the study were as follows: A) describe student respondents' background demographics, as well as their knowledge of international learning opportunities; B) describe students' perceptions of potential barriers toward partaking in such opportunities; C) describe and determine differences between respondents' perceptions of the importance of, and the degree to which they felt they possessed a set of attributes related to skills possessed by students involved in international activities; and D) develop a predication model comprised of those factors that exert the most significant influence on students' intent to engage in international opportunities.

Methods

This is the second year of a multiyear study of students' perceptions of international involvement activities at the University of Florida. The target population for this study ($N = 3,860$) was comprised of all undergraduate and graduate students in the College of Agricultural and Life Sciences. To conduct the study, a random

sample ($n = 800$) of students was drawn from the university's student records database. Sample size was calculated on the basis of sampling size formula, using a margin of error of .05, then adjusted to account for estimated probable response rate and nonworking emails addresses. The study, developed as an online Web form, utilized an 89-item, researcher-developed survey instrument that was descriptive in nature. The instrument included sections designed to measure respondents' perceptions, beliefs and intentions related to international involvement while a student, as well as related demographic questions. Other variables of interest included respondents' self perceived knowledge, as well as their ratings of the importance and the degree to which they felt they possessed a set of attributes formulated as statements and related to skills exhibited by students involved in international activities.

Additionally, a new section was added to the instrument consisting of a ten item Likert-type scale designed to assess students' perceptions of a set of potential barriers toward partaking in international activities adapted from Andreasen (2003). To assure face and content validity, a panel of experts reviewed the questionnaire, and it was subsequently revised to reflect panel members' suggestions. The final survey was developed as an online, Web-based survey instrument, using form development and data collection procedures as outlined by Dillman (2000) To initiate the survey, respondents first received an email cover letter informing them about the Web-based survey and providing them with a respondent code to keep track of respondents and non-respondents. After the initial posting of the survey, respondents were given two weeks to return it. A follow-up reminder was then sent to non-respondents. A third and fourth (final) reminder were then sent at ten day intervals. Data was directly captured in a database for subsequent statistical analysis. To control for non-response error, date of submittal was

tracked in the database to facilitate comparison of early and late respondents on the variables of interest. No differences were observed. Given the nature of the study, this approach to controlling for non-response error was deemed sufficient, as respondents were seen as those who had at least some level of interest. An assumption that has been cited in similar studies supports the concept of non-response error not being a factor if the desired population is comprised of those who have a pre-existing interest (Miller & Carr, 1997).

Post hoc reliability for the scaled items as calculated via Cronbach's alpha was $\alpha = .87$ (Place, Irani & Friedel, 2004) for the original study and $\alpha = .93$ for the present study.

Results

Of the 800 students surveyed, 48 instruments were returned due to unusable addresses, which reduced the accessible sample to $N = 752$. Of this number, 256 responded, for a response rate of 34%; however, 15 of the respondents were removed from the sample based on their having taken the survey during the previous year's study (a question was included on the instrument to this effect). The resulting sample ($n = 241$) included 36.1% ($n = 87$) male and 61.8% ($n = 149$) female respondents. Five students did not answer this question. Of those who did respond, the majority were undergraduates: 18% were college seniors ($n = 43$), 25.5% were juniors ($n = 61$), 8.8% were sophomores ($n = 21$) and 13.4% ($n = 32$) were freshmen, while 16.7% of respondents ($n = 40$) were master's level graduate students and 17.6% ($n = 42$) were Ph.D. students.

Objective One: Describe student respondents' background demographics, as well as their knowledge of international learning opportunities.

In response to a question asking respondents to describe their family's ancestry, a majority of students who

responded (75.3%) indicated that they were of European/Caucasian ancestry ($n = 174$). The second highest category of response (7.4%), was Mexican/Latin American ancestry ($n = 17$) followed by Asian (6.9%, $n = 16$). Other responses included African American (5.2%, $n = 12$) and Native American (2.2%, $n = 5$). Arab ($n = 1$), Puerto Rican ($n = 3$) or “other Caribbean” ($n = 3$) were chosen by 3% of respondents.

Respondents were asked about the size of the city or town where they grew up. 33.1% ($n = 78$) indicated that they were from a large suburban city ranging from 25,001-100,000 in population. 29.7% ($n = 70$) were from a small suburban city with population between 2501- 25,000, while 27.1% ($n = 64$) were from a large urban city with population over 100,000. Finally, 10.2% ($n = 24$) indicated they were from a rural town, with population less than 2,500.

With respect to language, the majority of respondents indicated that they had a working knowledge of at least two languages (48.1%; $n = 114$), while another 29.5% ($n = 70$) indicated they had a working knowledge of one language. There were 36 respondents (15.2%) who indicated they had a working knowledge of three languages, 15 respondents (6.2%) had a working knowledge of four languages and two respondents (.8%) indicated that they had a working knowledge of six languages. English was the primary language spoken, (78%), followed by Spanish (14%). Smaller

percentages spoke a variety of languages, including Chinese, French, Portuguese, Tamil, Arabic, Vietnamese and Turkish. When it came to speaking languages fluently enough to comfortably get around in another country, 63.2% of respondents ($n = 141$) spoke one language fluently, while another 32.3% ($n = 72$) spoke two languages fluently; 3.1% ($n = 7$) spoke three languages fluently, while 1.3% ($n = 3$) spoke four languages fluently—enough to get around in another country.

Respondents were also asked to indicate how knowledgeable they were in regards to international activities available through their undergraduate college department, their college of agricultural and life sciences, their university and in general outside the university. Responses ranged on a scale from 1=not knowledgeable to 5 = very knowledgeable. Results showed that respondents were somewhat knowledgeable about activities in general outside the university ($M = 2.49$, $SD = 1.04$), followed by at the university ($M = 2.16$, $SD = .92$), in their department ($M = 2.00$, $SD = 1.14$) and in their college of agricultural and life sciences ($M = 1.98$, $SD = .1.03$). Means and frequencies were calculated for each response item, then averaged together to create a summated index. Standardized item alpha for the resulting perceived knowledge of international activities construct was $\alpha = .81$, and these are noted in Table 1.

Table 1

Respondents' Perceived Level of Knowledge with Respect to International Involvement Activities

I am knowledgeable about international involvement activities:	<i>N</i>	<i>M</i> *	<i>SD</i>
In general outside the university	239	2.49	1.04
At the university	238	2.16	0.92
In the college of agricultural and life sciences	238	1.98	1.03
In my department	236	2.0	1.14
Grand Mean	239	2.16	0.80

Note. *Mean based on scale of 1=Not Knowledgeable, 2=Slightly Knowledgeable, 3=Somewhat Knowledgeable, 4=Knowledgeable, and 5=Very Knowledgeable.

Objective Two: Describe students' perceptions of potential barriers toward partaking in international involvement opportunities.

To achieve this objective, students were asked to respond to a series of Likert-type questions about their perception of potential barriers toward participating in international involvement programs and activities. Responses ranged from (1) strongly disagree to (5) strongly agree. Of the 10 questions asked, five of the items focused on tangible barriers such as difficulties in adding credit hours, time, need to work, not speaking the language and lack of knowledge, while the other five focused on attitudinal factors such as fear/uncertainty, not wanting to spend time away from family and friends, not seeing the value or relevance, concern about financial costs and lack of interest.

For the tangible barriers, results indicated that respondents agreed with the statement that the overall time it would take to participate was a barrier ($M = 3.48$, $SD = 1.16$). Respondents also somewhat agreed that the difficulty of adding more credit hours to their existing academic programs of study ($M = 3.21$, $SD = 1.22$) and lack of

knowledge about potential opportunities ($M = 3.17$, $SD = 1.15$) were barriers.

Respondents were more neutral about the role of needing to work/can't get time off from my job ($M = 3.10$, $SD = 1.30$) and not being able to speak the language ($M = 3.02$, $SD = 1.21$).

With respect to the intangible barriers, respondents most agreed with the statement that concern about financial costs of programs was a barrier ($M = 4.07$, $SD = 1.09$), followed by not wanting to spend time away from friends and family ($M = 2.92$, $SD = 1.35$). They disagreed that fear/uncertainty associated with participating in international programs ($M = 2.50$, $SD = 1.22$), lack of interest ($M = 1.81$, $SD = 1.04$) and not seeing the value or relevance ($M = 1.65$, $SD = .84$) were barriers.

As before, means and frequencies were calculated for each response item, then averaged together to create a summated index. Standardized item alpha for the resulting perceived barriers toward participating in international activities construct was $\alpha = .71$, and these are noted in Table 2.

Table 2

Perceptions of Potential Barriers to Personally Participating in International Involvement Activities

Response scale item	<i>N</i>	<i>M</i> *	<i>SD</i>
Difficulty of adding more credit hours to existing academic program of study.	239	3.21	1.22
Overall time it would take to participate.	239	3.48	1.16
Fear/uncertainty associated with participating in international programs in another country.	239	2.50	1.22
Not wanting to spend time away from family/friends.	239	2.92	1.35
Need to work/can't get time off from job.	239	3.10	1.30
Can't speak the language.	239	3.02	1.21
Don't see the value or relevance.	239	1.65	0.84
Lack of knowledge about available opportunities.	239	3.17	1.15
Concern about financial cost of programs.	239	4.07	1.09
Lack of interest.	239	1.81	1.04
Grand Mean	240	2.89	0.61

Note. *Mean based on scale of 1=Strong Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Objective Three: Describe and determine differences between respondents' perceptions of the importance of, and the degree to which they felt they possessed a set of attributes related to skills possessed by students involved in international activities.

To conduct the analysis, a five-point Likert scale was utilized to measure self-perceived levels of importance and possession across nine attribute items. Mean ratings were categorized according to the following standard: means ranging from 1.00 – 1.49, low; 1.50 – 2.49, below average; 2.50 – 3.49, average; 3.50 – 4.49, above average, and; 4.50 – 5.00, high. Means and frequencies were calculated for each attribute item, then importance attributes and possession attributes were averaged together to create a summated index. Standardized item alphas for the resulting importance of attribute and possession of attribute constructs was $\alpha = .88$ for importance attributes and $\alpha = .83$ for possession attributes.

Descriptive results showed that respondents perceived the overall

importance of the set of attributes as above average ($M = 4.21$, $SD = 0.59$). One item in this construct, ability to interact with people from other parts of the world ($M = 4.53$, $SD = 0.76$) was categorized as 'high' and all of the rest were in the 'above average' range. The overall degree to which respondents felt they possessed the set of attributes was rated to be average ($M = 3.49$, $SD = 0.61$). Five items in this construct were categorized as 'above average.'

Differences between perceived importance and perceived possession for each attribute were then calculated. Four attributes had a difference of 0.80 or greater. In rank order these include (difference noted in parentheses): "Knowledge of the humanitarian issues between the U.S. and other countries" (1.11), "Knowledge of global agricultural export markets and marketing systems" (1.03), "Knowledge of the economic issues between the U.S. and other countries" (1.00), and "Knowledge of the political issues between the U.S. and other countries" (0.98). These results are noted in Table 3.

Table 3

Attributes of Students Involved in International Activities Importance and Possession

Attribute	Importance		Possession		Difference ^a
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Understanding the differences between developed and developing nations	4.04	0.80	3.81	0.84	0.23
Awareness of the cultures of other countries	4.35	0.77	3.81	0.85	0.54
Knowledge of the economic issues between the U.S. and other countries	4.22	0.85	3.22	0.97	1.00
Knowledge of the political issues between the U.S. and other countries	4.25	0.80	3.27	0.98	0.98
Knowledge of the humanitarian issues between the U.S. and other countries	4.18	0.78	3.07	0.93	1.11
Knowledge of global agricultural export markets and marketing systems	3.88	0.93	2.85	1.09	1.03
Knowledge of what other countries' culture has added to U.S. society	4.04	0.90	3.51	0.90	0.53
Ability to interact with people from other parts of the world	4.53	0.76	3.95	0.95	0.58
Ability to function as a citizen in a global society	4.39	0.96	3.88	0.96	0.51
Grand Mean	4.21	0.59	3.49	0.61	

Note. ^aDifference = Importance Mean – Possession Mean.

Objective Four: Develop a predication model comprised of those factors that exert the most significant influence on students' intent to engage in international opportunities.

To develop a predictive model, multiple linear regression using the stepwise method was subsequently conducted, using a one item measure of intent to participate in international activities ($M = 3.44$, $SD = 1.18$) as the dependent measure, and the indexed scales for perceived barriers,

knowledge, and importance and possession attributes as independent variables. The regression yielded two highly significant models, with the strongest model explaining 14% of the variance in intent ($R^2 = .14$). The perceived barriers index was the strongest predictor of intent, followed by the importance of attributes index. The indexes for knowledge and possession of attributes were not significant predictors in the model (see Table 4).

Table 4

Significant Predictors of Intent to Participate in International Involvement Programs and Activities (N = 240)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Barriers	-.64	.12	.33
Step 2			
Barriers	.55	.12	-.28
Importance of attributes	.37	.13	.19

Note. $R^2 = .11$ for Step 1, $\Delta R^2 = .14$ for Step 2, $p < .01$.

A second stepwise regression was run, this time including the demographics variables gender, year in college, ancestry, urban/rural background, languages you have a working knowledge of, languages you speak fluently, and the perceived barriers, knowledge, importance attributes and possession attributes indexes as independent variables. A perception toward participation index comprised of nine Likert-type items measuring respondents' willingness to participate in international activities, and travel to another country for an international experience, combined with items measuring

perceptions of personal importance, benefits to career, altruism, mutual benefits, self interest, and mutual benefits between and potential source of competition between countries was computed and utilized as the dependent measure. Standardized item alpha for the resulting scale was $\alpha=.82$; $M = 3.44$, $SD = 1.18$. The regression yielded two significant models, with the strongest model explaining 43% of the variance in intent. In this model, the strongest predictor of intent was the importance index, followed by the perceived barriers index (see Table 5).

Table 5

Significant Predictors of Perceptions of Participating in International Involvement Programs and Activities

Variable	Beta	SE	T	Sig.
Perceived barriers index	-.339	.069	-6.54	.001
Importance of attributes index	.484	.071	9.27	.001

Conclusions, Recommendations and Implications

Previous findings (Place, Irani, & Friedel, 2004) have suggested that, in general, student respondents had limited knowledge about international learning opportunities, and limited experience in these activities. Nevertheless, the level of interest in participating and the degree to which respondents felt international learning activities were important was fairly high. A major implication of the present study was that low levels of knowledge and awareness might be related to potential barriers to student participation that could be addressed through educational efforts. Results of the present study again showed relatively low levels of knowledge. Students revealed only slight to some knowledge about international involvement activities. It was interesting to note that of the four levels that were assessed, students were more knowledgeable of opportunities outside of the university followed by university-level opportunities, then college and departmental

opportunities. More needs to be done to increase general awareness about opportunities that exist for students – particularly at the college and departmental level. Increased exposure is a necessary first step to make significant headway towards internationalizing the college of agriculture and life sciences.

On the other hand, students were in agreement on the importance of the international competence attributes. On the whole, they rated each of the attributes above average. When compared with their possession of these attributes, overall they felt that they were average in possession of these skills. Examination of individual attributes show differences between importance and possession particularly for the areas of: “Knowledge of global agricultural export markets and marketing systems;” “Knowledge of the economic issues between the U.S. and other countries;” “Knowledge of the humanitarian issues between the U.S. and other countries;” and “Knowledge of the political

issues between the U.S. and other countries.”

With respect to the prediction model, these results indicated that the most significant predictors of intent to participate in international activities were respondents’ perception of the importance of attributes related to international competence and the perceived barriers index. The importance of attributes index was a positive predictor, while the perceived barriers index was a negative predictor. Essentially, the greater the degree to which respondents perceived the importance of attributes representing competency outcomes of international involvement, the more likely they were to say they intended to participate in international programs and activities while in college. Conversely, the less they perceived potential barriers to their participation to exist, the more likely they were to express their intent. This finding starts to shed some light on avenues potentially designed to increase students’ willingness to become engaged in internationalization efforts. Based on these results, possible strategies might include pilot study work focusing on educating our students about specific attributes that may result from international experiences, as well as publicizing and promoting those “student success stories” where this effect is illustrated.

Another potential avenue may be to work on mitigating specific potential barriers that students may perceive. A key implication of this study is based on the fact that land grant institutions and the students who attend them may differ from private liberal arts schools in terms of the climate for internationalization—students from land grant institutions tend to be transfer students, on campus for only two years, and in academic programs with few foreign language requirements. Many of our students come from small towns and rural areas where opportunities for international acculturation experiences are very limited, a fact that may need to be considered by

institutions when planning international program experiences. Based on the findings of this study, concern about financial costs and time were the barriers that appeared most salient to students, issues that could be addressed through scholarships, more focus on less costly short term experiences and low cost campus-based activities such as classes, guest speakers and international festivals which may serve to acculturate students to be more receptive and motivated to engage in an international experience later on.

Although the results of this study cannot be generalized, the results do suggest that students’ intent is influenced by perceptual variables. Further research needs to be done in order to ascertain whether these are variables that may be subject to change via education and communication efforts. These findings also support the need for more long-term data collection designed to assess changes in perceptions over time. Indeed, the ultimate goal of this new effort is to develop a multiyear data set that can be used for longitudinal studies in order to ascertain the effect of our educational programming efforts over time. This approach focuses on the fact that preparing our students to be “globally-ready” graduates is a long-term endeavor, the fruits of which might best be evaluated on the basis of a long-term trend study. The present study is a part of that effort to provide much needed insight into how to affect change in terms of positioning our students to be true international citizens.

References

- Acker, D. G. (1999). Improving the quality of higher education in agriculture globally in the 21st century: Constraints and opportunities. *Journal of International Agricultural and Extension Education*, 6(2), 47-52.
- Acker, D. G., & Scanes, C. G. (1998). A case for globalizing US colleges of agriculture. *Journal of International Agricultural and Extension Education*, 5(1), 59-62.
- Acker, D. G., & Scanes, C. G. (1998). A case for globalizing undergraduate education and student learning at colleges of agriculture. *Journal of International Agricultural and Extension Education*, 7(1), 49-54.
- Andreasen, R. J. (2003). Barriers to international involvement. *Journal of International Agricultural and Extension Education*, 10(3), 65-69.
- Bruening, T.H., & Shao, X. (2005). What should be included in an international agriculture undergraduate course? *Journal of International Agricultural and Extension Education*, 12(1), 47-54.
- Bruening, T.H., & Frick, M. (2004). Evaluation of selected courses intended to internationalize the curriculum in the college of agriculture at Montana State University. *Journal of International Agricultural and Extension Education*, 11(1), 17-24.
- Dillman, D. A. (2000). *Mail and Internet Surveys: The Tailored Design Method* (2nd ed.). New York: John Wiley and Sons, Inc.
- Fugate, D. L., & Jefferson, R. W. (2001). Preparing for globalization – do we need structural change for our academic programs? *Journal of Education for Business*, 76(3), 160-167.
- Miller, G. & Carr, A. (1997). Information and training needs of agriculture faculty related to distance education. *Journal of Applied Communications*, 81(1), 1-9.
- Moore, E. A., & Woods, M. D. (2003). Internationalization of agricultural education and related disciplines: A review of research. *Proceedings of the National Agricultural Education Research Conference*, Orlando, FL.
- Place, N. T., Irani, T. A., Friedel, C. (2004). Beliefs, Attitudes, Perceptions and Predictors of International Involvement among College of Agriculture and Life Science Students. In: *Proceedings of the Association for International Agricultural and Extension Education Conference*, Dublin, Ireland.
- Tritz, J. A., & Martin, R. A. (1997). The collegiate international experience: Criteria for successful experience abroad programs. *Journal of International Agricultural and Extension Education*, 4(2), 49-55.
- Wingenbach, G. J., Boyd, B. L., Lindner, J. R., Dick, S., Arispe, S., & Haba, S. (2003). Students' knowledge and attitudes about international agricultural issues. *Journal of International Agricultural and Extension Education*, 10(3), 25-35.
- Zeliff, N. D. (1995). International business competencies considered important for FORTUNE's Global 500 firms. *Journal of International Business Studies, Dissertation Abstracts*, Second quarter, 448-449.
- Zhai, L., & Scheer, S. D. (2002). Influence of international study abroad programs on agricultural college students. *Journal of International Agricultural and Extension Education*, 9(3), 23-29.

Extension Service and Farmer Decision Making on New Cropping Lands in East Lombok Indonesia¹

Taslim Sjah

Department of Agricultural Socio-Economics
University of Mataram
Mataram 83125
Indonesia

E-mail: taslim_sjah@yahoo.com.au

Donald Cameron

School of Natural & Rural Systems Management
University of Queensland
Gatton Campus, QLD 4343
Australia

E-mail: dcameron@uqg.uq.edu.au

Keith Woodford

Agriculture & Life Sciences Division
PO Box 84
Lincoln University
Canterbury, New Zealand

E-mail: woodfork@lincoln.ac.nz

Abstract

This paper analyses farming systems management on new cropping lands in East Lombok, Indonesia, and its applications for extension. This research was conducted using semi-structured interviews with 41 farmer respondents managing new lands, and 27 key informants representing different viewpoints. A methodology that unifies the real-life choice theory of Gladwin (1980) and personal construct theory of Kelly (1955; 1991) was used to elicit relevant farmer decision information. By focusing on both behaviours and motivation, the approach was found to be effective in both describing farmer decisions and eliciting decision processes.

It is concluded that productivity on new lands is low, but not because of lack of experience or irrational decision making by farmers. Contributing factors included deficiencies in water availability, soil structure and fertility, and an inability of research and extension services to provide solutions. These results highlight the need for a farming systems approach to research and extension that is farmer-centric in relation to both objectives and resources.

Keywords: Agricultural Extension, Decision Making, New Cropping Lands, Lombok-Indonesia

¹ Acknowledgement: Authors acknowledge the School of NRSM, University of Queensland and AusAID who jointly funded this study. A similar version of this paper was presented at the Australasia-Pacific Extension Network Conference, October 2001.

Introduction

The Government of Indonesia has had a policy emphasis on food security, particularly by increasing rice production, which is expected in turn to improve farmers' welfare (Booth, 1988; Piggot, Parton, Treadgold, & Hutabarat, 1993). One of the strategies implemented to increase agricultural production has been land extensification, i.e. to develop new cropping lands suitable for rice production in at least one of the three planting seasons available within a normal year. Nearly 8000 ha new cropping lands were developed between 1979/1980 and 1995/1996 in Lombok Island, in Eastern Indonesia, and further significant land development is planned. Most of this land development occurred in East Lombok (O AFC WNT, 1995).

The policy of increasing agricultural production and farmers' income has been supported by other forms of farm assistance including provision of extension services and access to various credit schemes. Extension workers are expected to help farmers in dealing with both technical and market knowledge issues, but anecdotal evidence suggests there has been little contact with farmers on the new cropping lands, despite the recognition of issues of low productivity. Reasons for this deficiency are unclear; possible explanations include (a) a shortage of extension resources, or (b) extension services are not perceived as relevant to farmers' needs.

This paper describes aspects of a study into the farming systems of East Lombok that was designed to provide deeper understanding of productivity and profitability issues of 'new' cropping lands. Three specific research aims were identified: (i) documenting the productivity of new cropping lands in East Lombok; (ii) identifying factors constraining productivity; and (iii) proposing strategies for improving productivity. Achieving these aims was seen to involve documenting available farming resources and activities, farmer objectives

and decision-making processes, and farmer perceptions of problems and constraints, prior to formulating remedial strategies.

Following a brief review of the decision research literature, from which emerges an innovative combination of two well established approaches that was developed for this context, we set out relevant contextual information including biophysical, social and extension services details. Results presented include brief details of the farming population surveyed, and depict models of farmer crop-choice decision making, that have utility both as descriptive and predictive devices, that were developed during the research process. These models are then used to help explain why farmers make little use of extension services in making such decisions, and finally to examine the lessons that can be learnt from this finding.

Decision Theories

Theories of decision making have been categorised into a disciplinary spectrum ranging from economic to psychological (Hammond, McClelland, & Mumpower, 1980). Economics-based theories focus on rational choice between alternatives with multiple attributes, and could be seen to be normative in that they prescribe what people should do i.e. how to make decisions under conditions of risk and uncertainty. An example is Decision Theory, a mathematical approach that incorporates processes to quantify probabilities of possible outcomes and subsequent utility of competing alternatives, to facilitate making satisfaction-maximising decisions (Corander, 2003; Gomez-Limon, Arriaza, & Riesgo, 2003; Keeney & Raiffa, 1976; Marschak, 1978). Psychological theories focus on what people actually do, and underlying thought and judgment processes. For example, Attribution Theory (Curhan, Neale, & Ross, 2004; Kelley, 1973; Rehman et al., 2003; Zeelenberg, van der Pligt, & de Vries, 2000) deals with the 'psychology of

common sense', and describes human behaviour in response to internal and external forces, and focuses on problems of causal attribution. Many theories fall between the two extremes, and include influences from both economic and psychological perspectives. Behavioural Decision Theory (Edwards, 1961; Einhorn & Hogarth, 1981), Psychological Decision Theory (Kahneman & Snell, 1997; Kahneman & Tversky, 1972, 1973, 1979, 1992), Social Judgment Theory (Brunswik, 1952; Feldman, 1996; Hammond, 1966) and Information Integration Theory (N. H. Anderson, 1972; Lien, 2002) all recognise, in various ways, that human behaviour does not meet the pure rationality requirements of Decision Theory, and acknowledge the importance of individual perception, cognition, and preference in forming judgments and decision making.

Decision Theories Relevant to Farmers, and in Developing Countries

In the context of rural and farm management decision-making, the literature falls broadly into the three disciplinary groupings of agricultural economics, farm management, and rural development, but there is typically an economic or profit focus. Consequently, the agricultural economics disciplinary contribution, based on Decision Theory, has emphasised rational choice and utility maximisation (D. P. Anderson, Wilson, & Thompson, 1999; J. R. Anderson & Dillon, 1992; Cramer, Jensen, & Southgate, 2001; Hardaker, Huirne, & Anderson, 1997). The farm management discipline has focused more on the tension between profit and risk, and on devising risk-reducing strategies (Kay & Edwards, 1994; Makeham & Malcolm, 1993). Both disciplines have a normative thrust. In contrast, the rural development literature has a focus on describing and explaining what farmers do, and is therefore based on positive analyses. One of the seminal workers in this field is Gladwin (1977; 1979; 1979; 1980; 1989), whose Theory of

Real-Life Choice has been shown to be effective in both describing and predicting farmer decision making in both developed and developing country contexts. Among other applications, Gladwin demonstrated that the theory typically models successfully 85 to 95% of choice made by individuals, such as market decisions of Ghanaian fish sellers (C. H. Gladwin, 1975), Guatemalan farmers' cropping decisions (C. H. Gladwin, 1980). Gladwin's work is based in Psychological Decision Theory, and draws on the allied theories of 'elimination by aspects' (Tversky, 1972) and 'preference trees' (Tversky & Sattah, 1979). This theory was selected as promising an effective way of developing an understanding of farmer decision-making in East Lombok.

Theory of Real-life Choice

The theory proceeds from the observations that people need a simple procedure to make decisions, and tend to compare alternatives rather than ranking options. In order to overcome cognitive constraints, decision making proceeds through two stages: (1) an 'elimination by aspects' stage, often rapid, informal and even subconscious, in which the number of alternatives is reduced to a manageable number by eliminating those that fail to meet certain major criteria (e.g. specific crops' requirements for water, capital or labour); and (2) a decision tree or preference tree stage in which surviving alternatives are directly compared through a succession of personal preferences such as potential of different crops for satisfaction of family food needs, relative profitability, and relative riskiness.

The theory of real-life choice has successfully provided models of how decision-making occurs in both rural and urban settings, and in both developing and developed country contexts. However, it does not explain why people behave in particular ways, as it focuses on behaviour rather than motivation. One well-established

theory, which does this, is the Personal Construct Theory of Kelly (1955; 1991).

Personal Construct Theory

This theory postulates that people's "processes are psychologically channeled by the way in which they anticipate events" (Kelly, 1955, p. 46). In other words, their motivation and behaviour are led by expectations of the future (Murray-Prior, 1998). Such expectations are determined by their individual construct system, through which they interpret the world (make sense, discern patterns, establish order in the complexity of their life) and make predictions about future events and outcomes of decisions (Murray-Prior, 1998). The theory has been demonstrated to provide powerful insights, through eliciting relevant constructs from decision makers, into understanding their perspectives, in both a developing country context (Briggs, 1985) and a developed country context (Murray-Prior, 1994, 1998; Murray-Prior & Wright, 2001).

The complementarity of the approaches offered by the two theories provided justification for attempting to combine both in this study. Gladwin's real-life theory approach provides a framework in which complex decisions can be structured, simplified and analysed. Kelly's construct theory provides insights into the importance of individual values, experiences and expectations in relation to such judgments.

Methods

This study employed both qualitative and quantitative methods, based around in-depth semi-structured face-to-face interviews (N. H. Anderson, 1972; Babbie, 1990, 2004; Neuman, 1997). The focus of the questioning was on farmer decisions and practices, within a contextual framework of farmer objectives and farm resources, in regard to new cropping lands in East Lombok. The qualitative semi-structured approach was fundamental to exploration of

the 'what' and 'why' of farmer decisions processes, and the subsequent development of generic explanatory decision pathways. Two groups of stakeholders were identified: (i) farmers; and (ii) key informants (researchers, extension workers, market agents). Four villages were selected that would provide variety in geographical features and land development timeframes. The villages include Mamben Lauq and Karang Baru (in Aikmel District), Sambalia (in Sambalia District), and Pringgasela (in Masbagik District). A sub village was chosen within each village, based on information provided by the village leader on where new cropping lands had been developed in the selected years. Respondents were selected at random from those identified by the village leader to have been in control of 'new' land since its development, and for their availability for interviews. In total, 41 farmers were sampled (10 out of 18 farmers in the Village of Mamben Lauq; 10 out of 31 in Karang Baru; 14 out of 76 in Sambalia; and 7 out of 7 in Pringgasela). Information required fell into four categories: (i) biographical; (ii) resource details; (iii) farm management practices (crop types and areas, husbandry practices, annual cycle of events); and (iv) farm management processes (decision-making, objectives, crop choice determinants, sources and uses of information, and perceptions of problem issues).

In addition to the use of secondary (literature) sources, supplementary information was obtained from interviewing 27 key informants. Semi-structured face-to-face interviews were used, with questions tailored in each case to the area of expertise of individual respondents, who included land development officers, village and sub-village leaders and water distributors, extension workers, local and non-local traders, crop market experts, agronomists and soil scientists.

Agricultural Climate in East Lombok

Climatic conditions strongly affect agricultural production systems practised by farmers in the region. The climate in East Lombok is tropical with two distinct seasons, namely the 'wet' and the 'dry'

seasons. The wet season starts in November and ends in March (Table 1). Maximum daily temperatures range from 25-34°C and minimum temperatures range from 13-26°C.

Table 1

Average Monthly Distribution of Rainfall in East Lombok 1975-1994

Unit	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Mm	272	225	186	79	45	35	30	15	32	53	138	184	1294
Days	15	13	11	5	3	3	1	1	2	3	8	10	75

Note. Adapted from "Recapitulation of rainfalls in East Lombok 1975-1994 (In Indonesian: Rekapitulasi curah hujan di Lombok Timur 1975-1994)," by OAFCL, 1995, Selong: Office of Agriculture of Food Crops of East Lombok.

Administrative Structures

In Lombok society a neighbour group consists of 20-50 households, a sub-village comprises 5-15 neighbour groups, and a village contains around 10 sub-villages. A district contains about 10 villages, and there are 12 districts in East Lombok. There is a head person for each of these administrative groupings. In rural areas, selection comes from within the grouping by consensus rather than formal voting. With the position come certain powers to allocate some available farming land to individuals. Approaches to interview individuals for research purposes need to be made through the head persons. This was the only way in which to access individual respondents. Whether this requirement led to selection of biased respondents is impossible to tell. However, there was no evidence of direct interference, by village leaders, in responses gained from selected farmers. Furthermore, the policy of seeking at least 10 respondents in each village at least ensured a wide selection of viewpoints was canvassed.

Agricultural Extension Systems

Throughout rural Indonesia the Government administers the agricultural extension system. Its purpose is to transfer

new technology from research stations to farmers. It is typically based on the training and visit (T&V) systems whereby extension workers are trained in new technologies, and they then visit farmers and train them (Arboleya & Restaino, 2004; Benor, Harrison, & Baxter, 1984; Dejene, 1989). On occasions, demonstration plots are set up to help convince farmers that the technology is appropriate and worthwhile. Thereafter, the extension officer will visit farmers on a regular basis to advise and instruct.

Prior to 1990, in East Lombok, there was only one extension officer for every two villages. However, since that time there have been enough extension workers for each village to be serviced by two workers. In 1990 an attempt was made to introduce a system whereby extension officers became specialists in particular fields. However, in 1996 this policy was reversed and each officer is now responsible for matters relating to food crop husbandry, animal husbandry, fisheries, plantation crops and forestry. Thus they are expected to be generalists capable of providing advice on a wide range of topics and issues.

Farming Systems

A wide range of crops is grown. There are potentially three cropping seasons

per year, depending on moisture availability. Rice, the staple food, is typically grown first, in the wet season, with other secondary food crops following in subsequent seasons such as corn, sorghum, cassava, sweet potato, soybeans, peanuts and mungbeans, a variety of annual fruits, and vegetable crops including chili, garlic, onions, eggplant,

longbeans, cucumber, and tomatoes. All crops but rice are multiple cropped. Farmers apply this crop diversification policy to reduce risk of production failure or price drop of certain crops. The limited information available for farmers regarding prices received suggests substantial within- and between-year variation.

Table 2

Yield of Some Crops Grown on New Cropping Land and Average of East Lombok

Crop	New Land (NL) (kg/ha)	East Lombok (EL) (kg/ha)	NL/EL (%)
Wetland rice	2374	4552	52
Dryland rice	1048	NA ¹	NA
Garlic	6775	13006	52
Chili	557	1925	29
Mungbean	348	579	60
Corn	1317	1785	74
Longbean	1500	859	175
Soybean	167	1037	16
Peanut	579	1044	55

Note. ¹Data not available.

Physical productivity of new cropping lands is low. This was confirmed through the comparison of productivity of the lands to average productivity of East Lombok, which is contributed primarily by old established cropping lands (Table 2). Except longbeans, crops grown on new cropping lands produced at least 26% lower than average regency figure. This low productivity was due to many constraints on new cropping lands, particularly of insufficient water to irrigate farms and shortage of farmers' working capital to finance their farm activities. Both of these

limited farmers' capacity to apply improved farming practices, resulting in less use of agricultural inputs, especially fertilizers.

In term of income, calculated here as gross margin (GM) per hectare, i.e. total production value minus total variable cost, some crops performed better than other crops (Table 3). One feature of those cropping programs was that few farmers were growing high income crops because of the constraints encountered (crop selection processes are discussed in the section of 'farmer decision making').

Table 3

Gross Margin (GM) and Farm Cost (FC) Per Hectare of Crops or Crop Combinations Grown on New Cropping Lands

Crop or crop combination	GM (IDR 000)	N	R	FC (IDR 000)
Garlic	5660	4	1	2446
Chili+tobacco+peanut	3476	1	2	428
Chili+corn	3248	1	3	178
Chili+onion	2069	1	4	1731
Chili+tomato	2024	1	5	376
Pandanus	1762	3	6	50
Chili+tobacco	1547	11	7	405
Cassava	933	2	8	31
Chili+tobacco+cassava+longbean	790	1	9	237
Onion+longbean	723	1	10	1367
Chili+peanut+longbean	647	1	11	293
Wetland rice	572	28	12	442
Chili+soybean	543	1	13	411
Tobacco	354	1	14	66
Cane	351	3	15	155
Corn+cassava	333	1	16	317
Chili	234	5	17	160
Peanut	229	2	18	155
Chili+tobacco+garlic	213	1	19	412
Corn	205	16	20	169
Redbean	182	1	21	31
Mungbean	179	8	22	73
Soybean	148	2	23	277
Corn+peanut	138	2	24	195
Dryland rice	138	25	25	146
Sweet potato+cassava+corn	68	1	26	7
Sweet potato	41	2	27	8
Corn+longbean	-2	2	28	79
Longbean	-126	1	29	199

Note. N: Number of farmers; R: Ranking (of crop by GM).

Results

Farmer Profiles

In all cases the farmer respondents were males, reflecting that this is a traditional Muslim society where men take responsibility for farm decisions. This is quite similar to finding of Squire (2003) in his study of women participation in sustainable agricultural development in sub-Saharan, Africa, where men took leading role in most farm decisions. Respondent age

ranged from 29 to 88 years, with a mean of 51. More than one third of the farmers were older than 60 years. The average farming experience was 34 years. The average education was 4.4 years, ranging from 0 to 12 years. Only 15% had completed senior high school (12 years) and 44% had received no formal schooling. There was a small but statistically significant negative association between age and level of

education (regression coefficient -0.12 , $r^2 = 0.13$, $p=0.02$).

All farmers possessed new land as private property (as a consequence of sample selection). Three were also cultivating land of other status. These alternative systems of land occupation included rental for a fixed sum, crop sharing, and the *gadai* system whereby a farmer borrows money and the lender acquires cultivation rights to a parcel of land until the loan is repaid. Seven farmers also had 'old' land (cropped prior to implementation of extensification policies) and 15 farmers had other types including undeveloped land, garden and shifting cultivation land.

The average area of new land was 1.03 ha but with considerable variation both between farms (0.2 – 5.0 ha) and between the villages (0.5 – 1.5 ha). For the seven farmers who also owned old cropping land, the average area of this type of land was 0.3 ha. The average area of all lands (new, old and other lands) was 1.3 ha.

Most farmers (63%) owned livestock of some type, with 56% owning cattle, 37% poultry, 7% goats and 5% horses. Cattle are regarded as particularly valuable and serve several purposes including provision of draught power, as a source of income, and as a form of saving in a society where bank accounts are unusual. Herds averaged 2.4 head (range 1-9) in size and ranged in estimated value from IDR 150,000 to IDR 12,000,000 or US\$ 63 to US\$ 5,078 (US\$ 1 = IDR 2,363).

No farmers used any form of mechanisation on their farms. The busy periods of the year are at planting (especially for rice) and harvesting. At these times farmers rely on casual non-family labour, which is readily available. At other times of the year permanent family labour is often under employed.

The Use of Extension Advice by Farmers

Extension officers have work guidelines that broadly cover technical and

market (price) information for common forms of production. They transfer government recommendations and information from research stations to farmers.

In relation to types of land, extension workers focus more on 'old' land, where irrigation water and distribution infrastructure is more readily available than for 'new' cropping land. This is apparently predicated on the belief that if irrigation is sufficiently available, agricultural technology (such as fertilising) can be applied more easily and consistently, and with high probability of production improvement. Consequently, extension workers spend little time on the new cropping lands, and even if they do visit 'new' farms, farmers do not readily accept their advice. The use of extension services on new cropping land has been very limited.

Most farmers (66%) stated that there are no government recommendations to be applied on their new cropping lands. Another 12% did not know whether or not there were any recommendations. The remainder (22%) was aware of government recommendations from extension workers, but only one third of these (7%) applied any of their recommendations.

There are three types of recommendation available for the new cropping lands, but the only one applied by the farmers was to grow rice during the rainy season, and with other crops to follow. Three farmer respondents applied this recommendation because they thought that it was appropriate given the water situation on their farms. However, in reality nearly all farmers were following this strategy of rice followed by other crops, not because it was a recommendation, but because it was seen as being the obvious thing to do.

The second recommendation, to plant rice with individual plants exactly the same distance apart, using a special distance meter, was known by only three respondents. However, none of them applied it because the technique requires a lot of

work, time and cost, and there was a perception that it may be ineffective in any case.

The recommendation to apply balanced fertiliser on rice, i.e. 300 kg Urea, 100 kg TSP (Triple Super Phosphate), and 75 kg KCl (Potassium Chloride) per hectare was known by only three farmers, but ignored due to lack of capital.

In brief, even in situations where farmers were aware of the government recommendations for the new cropping lands, recommendations were ignored because they require extra expenditure and time, the techniques were not convincing in terms of producing better results, and the farmers faced the problem of lack of capital. This phenomenon is similar to that found by Fujisaka (1993; 1994), who investigated why farmers of Southeast Asia did not adopt recommendations, and found that farmers often have rational reasons related to cost, time, or biophysical aspects of the farming system. Similarly, Dorward (1996; 1999) found that poor farmers in Malawi fail to adopt new maize varieties because they lack supporting credit. In addition, one of the findings by Ajayi et al. (2003) revealed that farmers may adopt improved fallows if there are appropriate and conducive policy and institutional incentives.

Market price information is obtained mainly (78% of farmers) from traders or outside buyers who come frequently to the villages. The farmers usually compare the prices offered by three buyers before deciding to sell at a certain price. Other sources used were, in descending order: direct visit to the market place (32%); neighbours (12%); radio (5%) and television (2%). No farmer sought market information from printed media or from extension officers.

Technical information on farming practices was obtained from the farmers' parents (63%), neighbours (31%), extension officers (24%) and the reading of brochures (7%). Information from neighbours was sometimes obtained by direct communication and sometimes by observation. This evidence suggests that although extension officers were present in all villages, most farmers were not convinced of the value of their advice. Furthermore, most of the farmers using extension officers were in one village, Mamben Lauq. It became apparent during the survey in this village that many farmers had family connections with each other, e.g. through marriage, and they liked to attend extension activities together.

This less use of information from extension agents in this or other developing countries contrast the phenomena in advance countries, where farmers actively seek advice and even are willing to pay for services provided by extension agents (see e.g., Byrne, Kelly, & Ruane, 2003).

Farmer Decision Making

This study indicated that farming objectives of the farmer respondents were strongly economic, either directly or indirectly (Table 4). Only five of the eighteen stated objectives elicited through interviews were non-economic in character, and the frequency with which they were mentioned placed them no higher than sixth place. The three main objectives, which dominated all others, were to fulfill the family's basic needs of food, clothing and shelter, to finance children's schooling, and to undertake a pilgrimage to Mecca (Saudi Arabia).

Table 4

Farming Objectives Identified by Farmer Respondents

Objective	%
Fulfill family's basic needs	56
Finance children's education	56
Pilgrimage to Mecca	49
Have or add income or investment on livestock or land	15
Build a house (or a better house)	12
Provide working place for children	12
Donate to development in the community or help other people	7
Have leisure time	5
Pay or avoid debt	5
Make use of spare time	2
Substitute marketing activity	2
Have a simple job	2
Avoid stealing	2
Finance the next farm activities	2
Continue parents' traditions	2
Have increasing income	2
Buy a motorbike (for business use)	2
Seek profit	2

Note. Total percentage is more than 100 as some respondents provided more than one response.

As Moslems, the farmers are obliged to undertake a pilgrimage to Mecca once during their lifetime if they are financially and physically able to do so. Accordingly, it is likely that additional farmers, beyond the 49% who stated it as an explicit objective, would have this as a long-term objective. However, given their current struggle to meet basic family needs, it may have been considered unrealistic and therefore was not mentioned.

As shown in the section on climate, the farming systems on the new cropping lands on East Lombok are highly seasonal. Accordingly, the farmer decision processes are analysed here on the basis of planting seasons. Authors built intuitively the decision trees in the figures presented based upon farmers' responses and their revealed constructs when they were asked to provide reasons for selecting particular crops they were growing and for not selecting other crops (or for not planting their lands) at the season. The number of farmers following

each path in each figure was counted from planting programs that individual farmers applied on their farms in each season.

It is apparent that in the first planting season farmers grow rice almost exclusively (90% farmers). This decision to grow rice is influenced strongly by environmental conditions, in particular the difficulty in growing other crops during this rainy season. While rice is suited to excessive water availability, other crops may be easily spoiled by the existence of high moisture. Accordingly, if the land is available to be cropped, and not still carrying a crop from the previous season, then farmers planted rice. The choice between wetland and dryland rice is determined by whether or not the land is suitable for wetland rice, and whether there is likely to be sufficient water. Some of the farmers who grow dryland rice do so because of previous crop failures with wetland rice. In other words, farmers grow wetland rice as much as they could, and were rationally driven by higher production

per hectare (2,374 kg > 1,048 kg). The decision pathways for the first planting season, together with the number of farmers

following each path, are shown schematically in Figure 1.

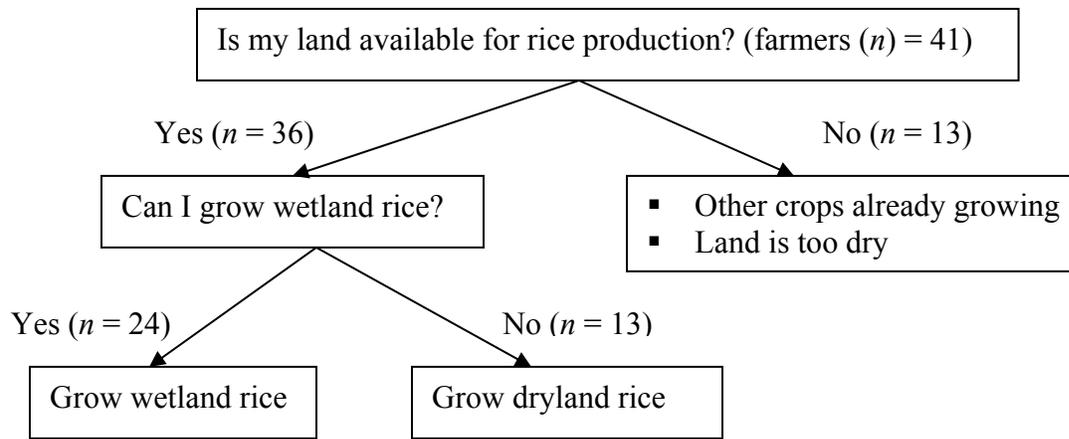


Figure 1. Farmers' decision model for the first planting season on new cropping lands. *Note.* Number of farmers following both paths in total is more than the total farmers because some farmers have followed different pathways for different fields.

It is apparent that decision making in the second and third planting seasons is much more complex than for the first season. This is because, as long as there is adequate water, there are a lot more crop alternatives. The first decision that farmers have to make in regard to these planting seasons is whether the land is available for cropping. Land availability is determined by whether or not the previous crop has been harvested, and whether or not there is likely to be sufficient water. This is shown schematically in Figure 2.

The process of choosing the particular crop to grow is complex. Clearly there are many considerations that farmers take into account, as indicated by the considerable diversity of reasons as to why farmers grow or do not grow particular

crops. Further, the range of crops available to farmers is considerable. The crops that are finally chosen differ both between farmers and between villages, and this would appear to reflect both differing environmental conditions and different farmer perceptions of expected profit and risk. It would seem that most farmers tend to choose the same crops as the previous season as long as they are satisfied with the previous returns. However, there is also an ongoing element of searching for better alternatives. It is notable that all farmers have grown more crops than those they are currently growing. All farmer respondents had experienced growing at least four kinds of crops, most had grown six to eight crops, and some even with more than ten crops. Rice was the most familiar crop.

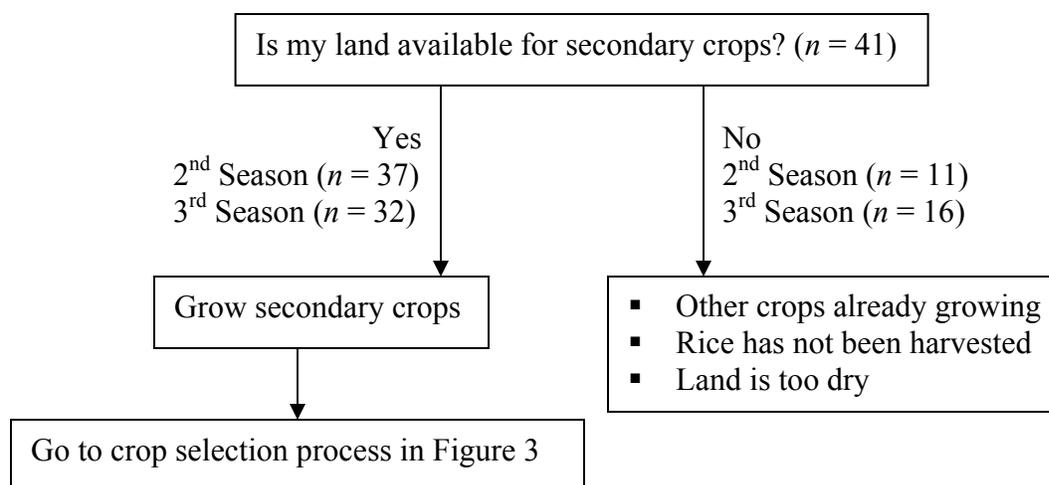


Figure 2. Farmers' decision model for the second and third planting seasons on new cropping lands. *Note.* Number of farmers following both paths in total is more than the total farmers because some farmers have followed different pathways for different fields.

The process to choose the particular crop can be depicted as a three-stage process (Figure 3). The first is a decision by the farmer as to whether he is satisfied with the choices made in the previous year. This information was obtained by comparing the current cropping programs and the farmers' plans for the next year. Respondents were questioned on why they planned to change or not change their cropping programs for the subsequent year.

The second stage is to eliminate all those crops that for various reasons are non-feasible due to inadequate resources. A deep inquiry was again placed upon farmers' reasons for selecting particular crops and why not other crops. This process is similar to **elimination by aspects** in stage 1 of **Real-life Choice Theory** of Gladwin (1980). The most important of these resources is water, but in some situations lack of capital, knowledge, labour, or market demand may also be constraints. If farmers thought that water would not be sufficient to support crop growth then farmers would eliminate those crops directly, and so on. This process of elimination is largely done as a subconscious process (H. Gladwin & Murtaugh, 1980).

The third stage of the decision process is to choose between the feasible crops. Given there was more than one crop that could be grown after the crops could pass all constraints recognized by farmers, farmers were interviewed with their reasons for opting for a certain crop and not others. This would appear to involve a trade-off between expected profit and risk. Farmers' revealed reasons were mostly one-sided, in that they either selected a crop due to its higher profit potential or they rejected a crop for its high production or market risk. However, individual farmers have to make these decisions based on limited information, and hence they have differing perceptions as to both income and risk. The finding of this last stage of decision making process appears to be similar to the findings in study of girls' selection of educational programs in Swaziland (Dlamini, Ngwenya, & Dlamini, 2004). The study revealed that girls selected science programs for economic reasons of the availability of financial assistance and jobs, while some girls appeared to avoid risk of joining non-traditionally-female programs, which they lacked familiarity.

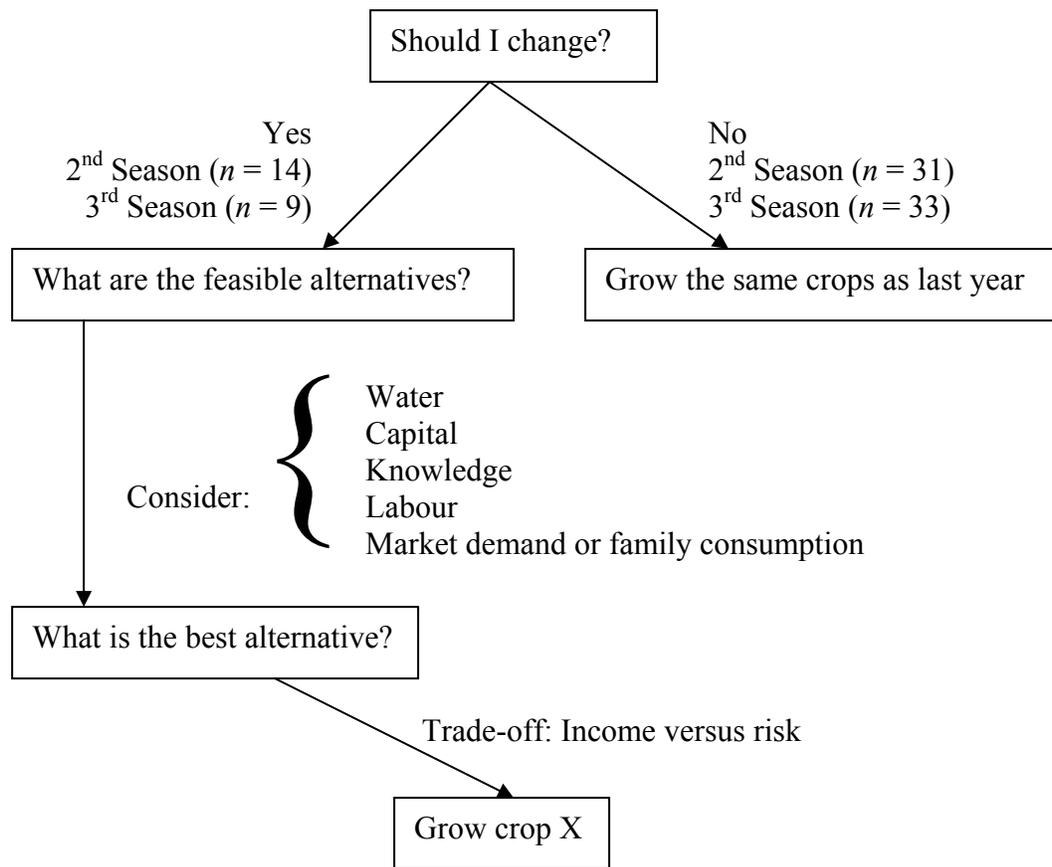


Figure 3. Crop Selection Process in the Second and Third Planting Seasons on New Cropping Lands. *Note.* Numbers of farmers (n) recorded following the pathways here is based on the farmers' plans for the following year. Some farmers could not be recorded, because they had not decided their plans, and some farmers followed both pathways.

Discussion and Conclusion

Gladwin's (1980) theory of real-life choice employed in this research has allowed development of models of farmer decision-making processes. Aspects or constructs that farmers used in making crop choices were elicited using Kelly's (1955; 1991) personal construct theory by inquiring into stake holders' reasons for their behaviours. This facilitates better understanding of farmers thought processes and priorities, and thereby provides guidance for better targeting extension efforts in future. It is evident that the limited use of available extension services by farmers was due to three main reasons:

1. Food and family security could be met by growing the very familiar rice crop

for which advice was deemed unnecessary.

2. Capital constraints prohibited use of expensive inputs, such as fertiliser, which were considered to be antithetical to build up of financial reserves for such purposes as a trip to Mecca, education of children, or securing better housing or more farming capacity.
3. Given that there is no evidence of technical research undertaken on these lands, extension officers are not in a position to train farmers in specific, appropriate practices.

This highlights the need for a farming systems approach to research and extension, such that the issues investigated are relevant to the farming situation, as

experienced by the farmers. The basis for this is the finding that the crop choice and input decisions (agricultural recommendations) that farmers were applying appeared to be logical in relation to their personal constructs as determined by their objectives, experiences and information sources (Kelly, 1955, 1991). Farmers were constrained by insufficient water for irrigation and lack of working capital to grow 'better' crops. In addition, alternative crop choices leading to a potentially higher income also involved increases in both financial outlays and perceived business risk, and therefore were seen as irrelevant.

The conclusions to be drawn from this work exist at two levels – the specific and the general. At the **specific level** of the new cropping lands of East Lombok, it is apparent that there is a lack of accord between extension advice and farmer needs and perceptions. For extension to be capable of contributing to increased farm productivity and profitability, this discord needs to be addressed. Greater farmer involvement in definition of farm level problems will facilitate formulation of relevant and applicable solutions. This would require a change in extension orientation from a top-down to a more collaborative and interactive form of communication. For example, better understanding of farmers' construction of a major constraint, such as finance or intermittent water supply, can powerfully inform design of effective solutions.

At the **general level**, there is considerable potential for wider application of the combination of methodologies reported here. Eliciting from farmers' decision making processes, in terms not only of 'how' but also of 'why' is a valuable addition to the suite of technologies available for effectively enhancing agricultural systems in both developed and developing country contexts. The strength of the approach is that it focuses directly on explaining both behaviours and motivations,

and also provides an efficient construct for communicating the insights that emerge.

Additional conclusion resulted from this study is that there are other possible ways of improving farmers' income. With regard to the major farm problem of lack of water supply, it appears that irrigation infrastructure needs to be developed or improved such that cropping intensity can be increased, as well as inclusion of more profitable crops (such as wetland rice and garlic) in farmers' cropping programs.

References

- Ajayi, O. C., Franzel, S., Kuntashula, E., & Kwesiga, F. (2003). Adoption of improved fallow technology for soil fertility management in Zambia: Empirical studies and emerging issues. *Agroforestry Systems*, 59(3), 317-326.
- Anderson, D. P., Wilson, P. N., & Thompson, G. D. (1999). The adoption and diffusion of level fields and basins. *Journal of Agricultural and Resource Economics*, 24(1), 186-203.
- Anderson, J. R., & Dillon, J. L. (1992). *Risk analysis in dryland farming systems*. Rome: FAO.
- Anderson, N. H. (1972). *Information integration theory: A brief survey*. San Diego: Center for Human Information Processing, University of California.
- Arboleya, J., & Restaino, E. (2004). Agricultural extension models in South America: A description of systems in use in Argentina, Brazil, Paraguay and Uruguay. *HortTechnology*, 14(1), 14-19.
- Babbie, E. (1990). *Survey research methods*. Belmont, California: Wadsworth Publishing Company.
- Babbie, E. (2004). *The practice of social research* (10th ed.). Belmont: Wadsworth.

- Benor, D., Harrison, J. Q., & Baxter, M. (1984). *Agricultural extension: The training and visit system*. Washington, D.C.: The World Bank.
- Booth, A. (1988). *Agricultural development in Indonesia*. Sydney: Asian Studies Association of Australia.
- Briggs, J. (1985). An exploratory study of farmers' choice of crops in Central Sudan. *Transactions of the Institute of British Geographers, New series, 10*, 170-180.
- Brunswik, E. (1952). *The conceptual framework of psychology*. Chicago: University of Chicago Press.
- Byrne, A., Kelly, T., & Ruane, D. J. (2003). Business management practices on Irish Dairy Farms - The role played by extension. *Journal of International Agricultural and Extension Education, 10*(3), 5-11.
- Corander, J. (2003). Bayesian graphical model determination using decision theory. *Journal of Multivariate Analysis, 85*(2), 253-266.
- Cramer, G. L., Jensen, C. W., & Southgate, D. D. J. (2001). *Agricultural Economics and Agribusiness* (8th ed.). New York: John Wiley & Sons.
- Curhan, J. R., Neale, M. A., & Ross, L. (2004). Dynamic valuation: Preference changes in the context of face-to-face negotiation. *Journal of Experimental Social Psychology, 40*(2), 142-151.
- Dejene, A. (1989). The training and visit agricultural extension in rainfed agriculture - lessons from Ethiopia. *World Development, 17*(10), 1647-1659.
- Dlamini, M. P., Ngwenya, S. S., & Dlamini, B. M. (2004). Reasons girls choose agriculture or other science and technology programs in Swaziland. *Journal of International Agricultural and Extension Education, 11*(3), 69-77.
- Dorward, A. (1996). Modeling diversity, change and uncertainty in peasant agriculture in northern Malawi. *Agricultural Systems, 51*(4), 469-486.
- Dorward, A. (1999). Modeling embedded risk in peasant agriculture: methodological insights from northern Malawi. *Agricultural Economics, 21*(2), 191-203.
- Edwards, W. (1961). Behavioral decision theory. *Annual Review of Psychology, 12*, 473-498.
- Einhorn, H. J., & Hogarth, R. M. (1981). Behavioral decision theory: Processes of judgment and choice. *Annual Review of Psychology, 32*, 53-88.
- Feldman, J. (1996). Social cognition, reality, and job perception. In W. H. Loke (Ed.), *Perspectives on judgment and decision making* (pp. 31-46). Lanham: Scarecrow Press, Inc.
- Fujisaka, S. (1993). Were farmers wrong in rejecting a recommendation? The case of nitrogen at transplanting for irrigated rice. *Agricultural Systems, 43*, 271-286.
- Fujisaka, S. (1994). Learning from six reasons why farmers do not adopt innovations intended to improve sustainability of upland agriculture. *Agricultural Systems, 46*, 409-425.
- Gladwin, C. H. (1975). A model of the supply of smoked fish from Cape Coast to Kumasi. In S. Plattner (Ed.), *Formal methods in economic anthropology* (pp. 77-127). Washington: A Special Publication of the American Anthropological Association, No. 4.
- Gladwin, C. H. (1977). *A model of farmers' decision to adopt the recommendations of Plan Puebla*. Unpublished doctoral thesis, Stanford University, Stanford.

- Gladwin, C. H. (1979). Cognitive strategies and adoption decisions: a case study of non adoption of an agronomic recommendation. *Economic Development and Cultural Change*, 28(1), 155-173.
- Gladwin, C. H. (1979). Production function and decision models: complementary models. *American Ethnologist*, 6(4), 653-674.
- Gladwin, C. H. (1980). A theory of real-life choice: applications to agricultural decision. In P. F. Bartlett (Ed.), *Agricultural decision making: Anthropological contributions to rural development* (pp. 45-85). New York: Academic Press.
- Gladwin, C. H. (1989). *Ethnographic decision tree modeling*. Newbury Park, California: Sage Publications.
- Gladwin, H., & Murtaugh, M. (1980). The attentive-preattentive distinction in agricultural decision making. In P. F. Bartlett (Ed.), *Agricultural decision making: Anthropological contributions to rural development* (pp. 115-135). New York: Academic Press.
- Gomez-Limon, J. A., Arriaza, M., & Riesgo, L. (2003). An MCDM analysis of agricultural risk aversion. *European Journal of Operational Research*, 151(3), 569-585.
- Hammond, K. R. (1966). *The Psychology of Egon Brunswik*. New York: Holt, Rinehart and Winston.
- Hammond, K. R., McClelland, G. H., & Mumpower, J. (1980). *Human judgment and decision making. Theories, methods, and procedures*. New York: Praeger.
- Hardaker, J. B., Huirne, R. B. M., & Anderson, J. R. (1997). *Coping with risk in agriculture*. Wallingford, UK: CAB International.
- Kahneman, D., & Snell, J. (1997). Predicting a changing taste: Do people know what they will like? In W. M. Goldstein & R. M. Hogarth (Eds.), *Research on judgment and decision making* (pp. 393-410). Cambridge: Cambridge University Press.
- Kahneman, D., & Tversky, A. (1972). Subjective probability: a judgment of representativeness. *Cognitive Psychology*, 3, 430-454.
- Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, 80, 237-251.
- Kahneman, D., & Tversky, A. (1979). A prospect theory. *Econometrica*, 47, 263-291.
- Kahneman, D., & Tversky, A. (1992). Advance in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5, 297-324.
- Kay, R. D., & Edwards, W. M. (1994). *Farm management*. New York: McGraw Hill.
- Keeney, R. L., & Raiffa, H. (1976). *Decisions with multiple objectives: Preferences and value tradeoffs*. New York: Wiley.
- Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28(2), 107-128.
- Kelly, G. A. (1955). *The psychology of personal constructs*. New York: Norton.
- Kelly, G. A. (1991). *The psychology of personal constructs*. London: Routledge.
- Lien, G. (2002). Non-parametric estimation of decision makers' risk aversion. *Agricultural Economics*, 27(1), 75-83.
- Makeham, J. P., & Malcolm, L. R. (1993). *The farming game now*. Cambridge: Cambridge University Press.

- Marschak, J. (1978). Decision making: economic aspects. In W. H. Kruskal & J. M. Tanur (Eds.), *International encyclopedia of statistics* (pp. 116-130). New York: The Free Press.
- Murray-Prior, R. (1994). *Modeling decisions of woolproducers: Hierarchical decision models and personal construct theory*. Unpublished doctoral thesis, University of New England, Armidale.
- Murray-Prior, R. (1998). Modeling farmer behaviour: A personal construct theory interpretation of hierarchical decision models. *Agricultural Systems*, 57(4), 541-556.
- Murray-Prior, R., & Wright, V. E. (2001). Influence of strategies and heuristics on farmers' response to change under uncertainty. *Australian Journal of Agricultural and Resource Economics*, 45(4), 573-598.
- Neuman, W. L. (1997). *Social research methods: Qualitative and quantitative approaches*. Boston: Allyn and Bacon.
- O AFC EL. (1995). *Recapitulation of rainfalls in East Lombok 1975-1994 (In Indonesian: Rekapitulasi curah hujan di Lombok Timur 1975-1994)*. Selong: Office of Agriculture of Food Crops of East Lombok.
- O AFC WNT. (1995). *New cropping lands development in West Nusa Tenggara (In Indonesian: Perkembangan pencetakan sawah baru di Nusa Tenggara Barat)*. Mataram: Office of Agriculture of Food Crops of West Nusa Tenggara.
- Piggot, R. R., Parton, K. A., Treadgold, E. M., & Hutabarat, B. (1993). *Food price policy in Indonesia*. Canberra: ACIAR.
- Rehman, T., McKemey, K., Garforth, C., Huggins, R., Yates, C. M., Cook, R. J., et al. (2003, 10-15 August 2003). *Theory of reasoned action and its integration with economic modeling in linking farmers' attitudes and adoption behaviour - An illustration from the analysis of the uptake of livestock technologies in the south west of England*. Paper presented at the 14th International Farm Management Congress: Farming at the edge, Perth.
- Sjah, T., Cameron, D., & Woodford, K. (2001). *Applications for extension from research into farmer decision making on new cropping lands in East Lombok, Indonesia*. Paper presented at the Australasia-Pacific Extension Network Conference: Exploring beyond the boundaries of extension, 3-5 October 2001, Toowoomba.
- Squire, P. J. (2003). Strategies for enhancing women's full participation in sustainable agricultural development and environmental conservation in sub-Saharan Africa. *Journal of International Agricultural and Extension Education*, 10(1), 5-10.
- Tversky, A. (1972). Elimination by aspects: a theory of choice. *Psychological Review*, 79(4), 281-299.
- Tversky, A., & Sattah, S. (1979). Preference trees. *Psychological Review*, 86(6), 542-575.
- Zeelenberg, M., van der Pligt, J., & de Vries, N. K. (2000). Attributions of responsibility and affective reactions to decision outcomes. *Acta Psychologica*, 104(3), 303-315.

Commentary

Agricultural Knowledge and Development in a New Age and a Different World

William M. Rivera

Professor

College of Agriculture and Natural Resources

3119 Jull Hall

University of Maryland

College Park, MD 20742

E-mail: wr@umd.edu

Abstract

The paper examines developments and issues regarding agricultural knowledge systems which affect agricultural development. It covers three purposes. The first is to review the evolution of four international agricultural knowledge frameworks. The second is to examine various initiatives in Latin America with implications worldwide for advancing innovations for agricultural development. Finally, I outline what I consider to be the main elements that tend to make some countries more innovative than others.

Keywords: Development, Extension, Innovation Systems, Knowledge Frameworks, Latin America, Organizations

Introduction

Widespread calls for reform of extension systems have brought the institution to an important turning point in the history of agricultural knowledge and development. There is an ongoing “power shift” taking place, from public to private sector enterprise. Globalization challenges all countries to find new and better ways of competing in the world marketplace.

To respond to these challenges, privatization and demand-driven extension approaches are being advocated by international organizations and consortia, including the Consultative Group on International Agricultural Research (CGIAR) and its international agricultural research centers, the World Bank, and the Food and Agricultural Organization of the United Nations, the International Fund for Agricultural Development, the U.N. Development Program, and the multi-agency Neuchâtel Group. Fittingly at its annual conference, held in November 2005 in Berlin, the multi-agency Neuchâtel Group focused its discussion on the advancement of demand-driven research and extension approaches to agriculture.

Frameworks

Frameworks can energize. They can provide structure for both action and study. In this sense, they are like theories that guide practice. Both theories and frameworks can present a plausible or scientifically acceptable general principle that purports to explain how things work, or in the case of frameworks, how things might

work better. Frameworks are a kind of scaffolding around which we can build initiatives. Frameworks are also useful for guiding interventions and investment. Hence, the adoption of a framework by development agencies has political and social as well as programmatic and financial implications.

In the past 50 years, four major frameworks regarding research and extension, and education, have been advanced one after the other by international organizations to promote agricultural development. These four frameworks are useful to review for they clarify how our thinking about research, extension services, and education has evolved and changed over time. The four frameworks are generally known by their acronyms:

- NARI—National Agricultural Research Institutes
- NARS—National Agricultural Research Systems
- AKIS/RD—Agricultural Knowledge and Information System for Rural Development
- AIS—Agricultural Innovation System

These four frameworks gained importance on an international level because they were used by agriculture’s major international organizations, most notably the CGIAR international agricultural research centers, the World Bank, and the FAO. Figure 1 provides an overview of the evolution of these frameworks.

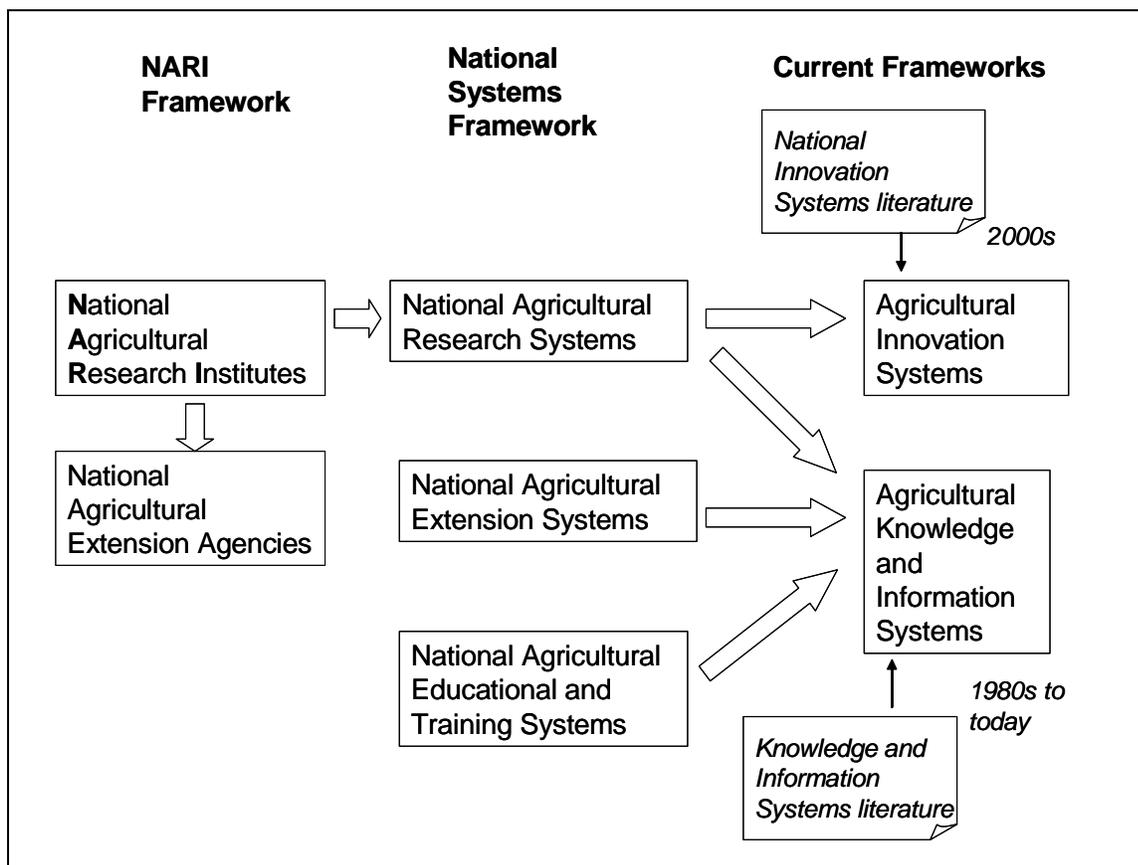


Figure 1. The evolution of knowledge-system frameworks. From “Enabling Agriculture: The Evolution and Promise of Agricultural Knowledge Framework,” by W. M. Rivera, G. Alex, J. Hanson, and R. Birner, 2006, *Proceedings of the 22nd Annual Conference of the Association for International Agricultural and Extension Education, Clearwater Beach Florida*, pp. 580-591.

NARI. The National Agricultural Research Institutes (NARI) framework was the first framework that emerged after World War II. In this framework, the national agricultural research agencies were seen as the main recipients for international investments. These investments aimed to build the NARI institutions and improve their capacity.

NARS. Following the NARI, there emerged a larger framework known as the National Agricultural Systems (NARS) framework, displayed in the second column of Figure 1. This framework includes the main institutions that contribute to the agricultural knowledge flow, including the National Agricultural Extension Systems (NAES) and the National Agricultural Education and Training Systems (NAETS),

as well as the National Agricultural Research Institutes (NARI).

As shown in Figure 1, two frameworks have emerged since the NARI and the NARS. They are the Agricultural Knowledge and Information System (AKIS) framework and the Agricultural Innovation System (AIS) framework.

AKIS. The AKIS stresses the need for strong linkages between and among agricultural research, extension and education institutions and organizations in the public, private and “third sector,” which includes non-governmental and civil society community organizations. Developed in the 1970s and 80s (Bunting, 1986; Nagel, 1979; Röling, 1987, 1990) and modified as AKIS/RD by FAO and the World Bank in the mid-1990s, the concept basically stresses

institutional linkages for advancing knowledge systems in agricultural and rural development.

A recent analysis comparing ten country case studies of AKIS/RD (Rivera, Qamar, & Mwandemere, 2005) highlights three ideas: 1) the continuing importance of linking education, research and extension outreach services, 2) the concept of “strategic alignment” to integrate AKIS/RD goals into public and relevant private sector organizations, and 3) a focus on agriculture as an aspect of rural development. The concept of strategic alignment means that within the context of a national innovation strategy agricultural knowledge system institutions and organizations aim to accomplish specific, agreed-upon goals, meanwhile carrying out the functions specific to their general mandate.

AIS. The AIS is a most recent concept and an emerging framework for advancing agricultural innovation systems. The agricultural innovation systems approach is a social construct based on the industrial notion of National Innovation Systems or NIS, with roots in evolutionary economics (Balzat, 2002). The AIS seeks to promote the concept of a *sectoral innovation system*, an approach that grew out of the NIS and was advanced in the mid-1990s (Breschi & Malerba, 1997).

What is a “national innovation system?” According to economists Edquist (1997) and Balzat (2002), “a national innovation system consists of organizations and institutions that influence each other in developing, absorbing and diffusing innovations in a country” (Balzat, 2002, p. 11; Edquist, 1997, p. 14). A bit of reflection suggests that AIS and AKIS are in some ways almost homologous in that they have similar values, although their structural orientation differs in that the AKIS highlights the institutions involved in promoting innovations for agricultural development while the AIS stresses the line of attack where innovation is needed, i.e., in the technical, managerial, commodity and institutional arenas.

What renders AIS distinct from previous systems is its emphasis on well established development approaches, such as value chain, market chain, and supply chain development strategies, with emphasis on high-value products and export markets. However, a criticism of the AIS system is the perceived lack of concern about environmental and social consequences. Figure 2 provides an operational view of institutional interconnectedness as conceived by the USAID-funded Agricultural Partnership, Productivity and Prosperity (AP3) program (USAID 2003). This model illustrates the multiple actors and the diversity of possible stakeholders in a dairy project in Kenya.

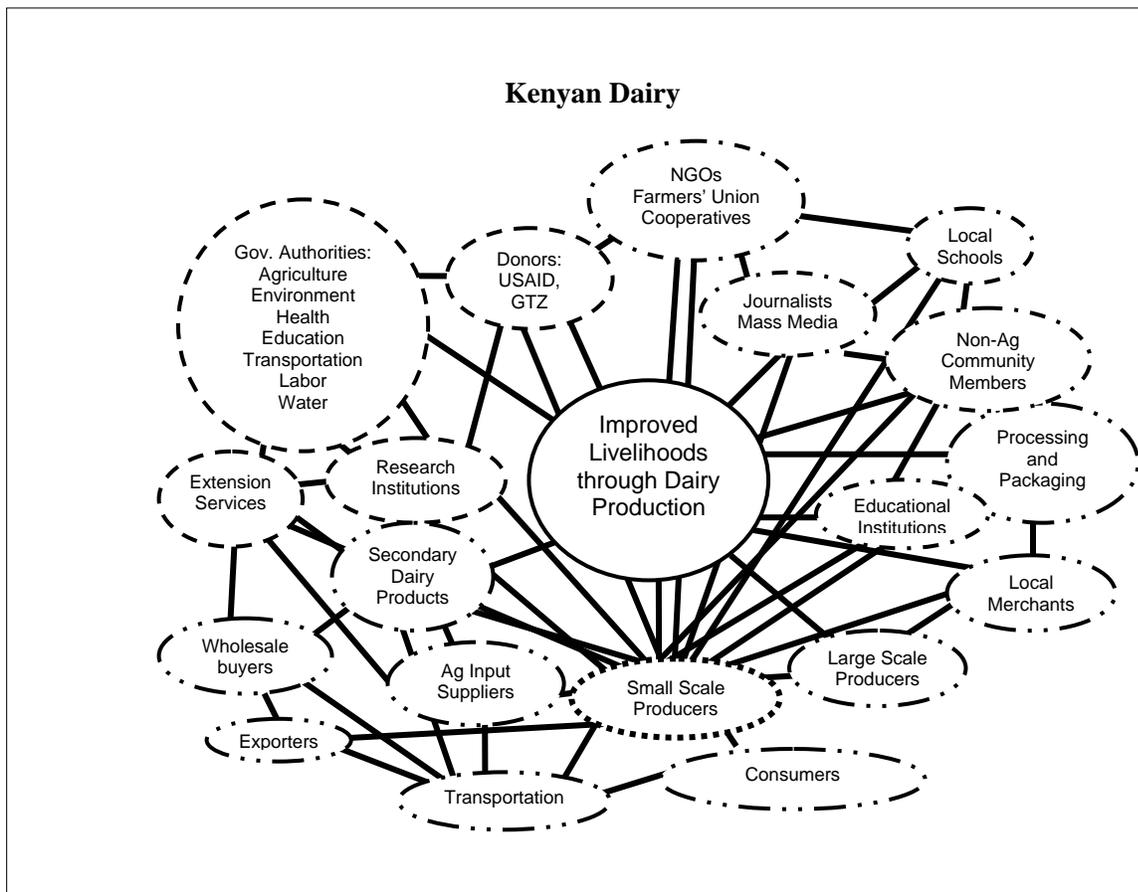


Figure 2. Mapping stakeholder relations: The Kenya dairy project. From “Agricultural Partnerships for Productivity and Prosperity (AP3),” presented at USAID, December 1, 2004.

This USAID strategy seeks to improve communications by involving all participants and potential stakeholders for a specific issue – in this case a commodity – and to bring them together to then to analyze jointly a potential situation and develop action plans to address that potential.

Figure 2 is a generic, or all-inclusive view of the institutions and organizations possibly involved in improving livelihoods through dairy production. Others (Mytelka, 2004) have provided explicit illustrations of connections and concerns in specific food industries, such as fish farming and viticulture. The gist of Figure 2, however, is the interconnectedness and the important interactions that need to be established among the various public, private and third-sector non-governmental and community-based actors in the development of

innovations in the production and processing of agricultural products.

At this point, I would like to suggest that in adopting an AIS perspective, we must be careful not to forget the importance of previous frameworks, and not “throw out the baby with the bath water,” so to speak. The three previous frameworks indicate certain truths that deserve to be remembered. For example, the NARI and the NARS are both concerned with capacity development and institution building. The AKIS framework promotes linkages among all actors in the knowledge system, including those in the public, private and third, or collective, sectors.

The World Bank has shifted its emphasis regarding AKIS/RD and regards this framework rather as a component of AIS. The AIS is therefore seen to encompass

these various frameworks and their distinct goals along with its emphasis on food chains, high-value products, and export markets.

In another illustration, Figure 3 illustrates the interconnectedness and the overlap of the four frameworks. Figure 3 is also intended to suggest that the different frameworks capture different perspectives and thus complement each other. Research and extension, capacity strengthening, system coordination, and the promotion of interconnectedness between public and commercial institutions to promote innovations – together these are fundamental elements of a comprehensive knowledge system.

Frameworks after all are just that: frameworks. The issue for countries, according to Mytelka (2004) is to recognize the need to change from being “technology producers” to becoming “technology users” and focus on building a “system of innovation” as opposed to a “system of production” with an understanding of development as a shift away from “traditional” sectors and toward “high tech” sectors.

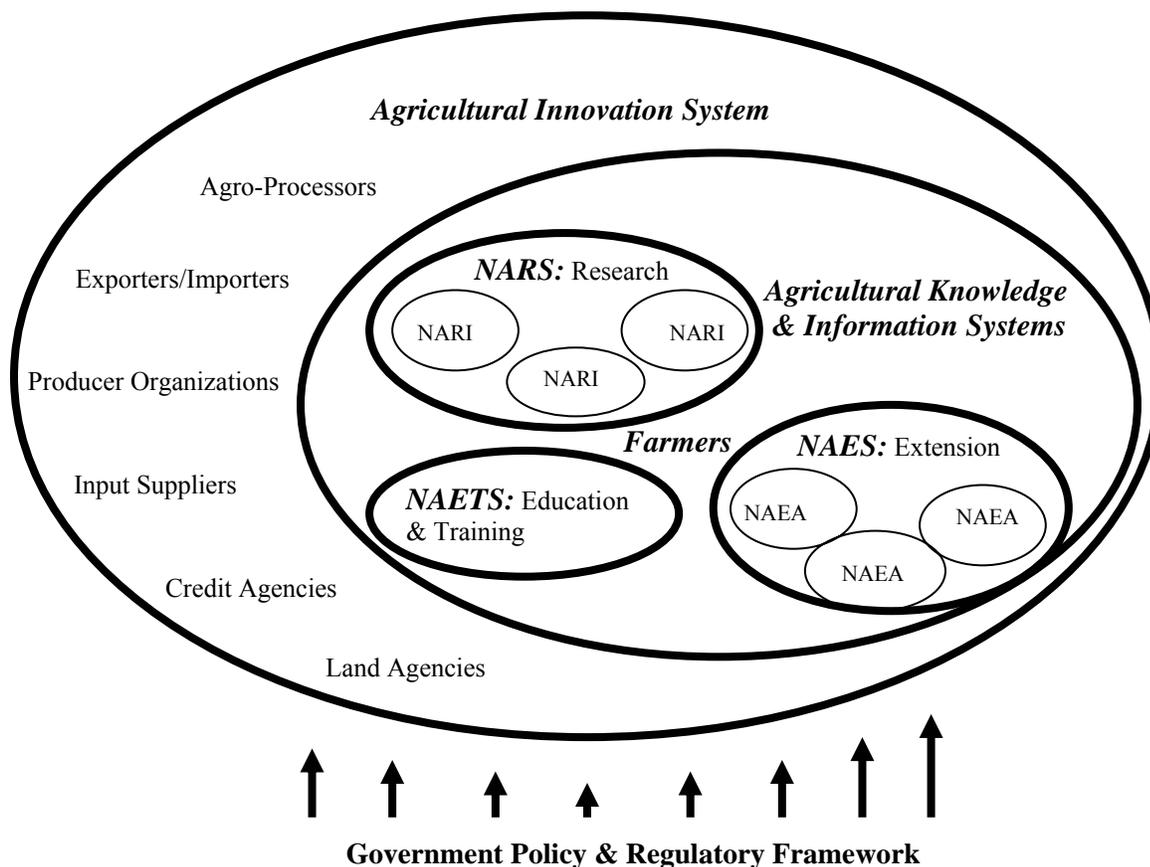


Figure 3. Overlapping frameworks. From “Enabling Agriculture: The Evolution and Promise of Agricultural Knowledge Framework,” by W. M. Rivera, G. Alex, J. Hanson, and R. Birner, 2006, *Proceedings of the 22nd Annual Conference of the Association for International Agricultural and Extension Education*, Clearwater Beach Florida, pp. 580-591.

Also, at the foot of Figure 3 is a reminder that despite the present emphasis on the role of the private sector in agricultural development, the role of government continues to be an important element in policy formulation and sector regulation in the advancement of agricultural knowledge.

Let us now turn to initiatives for developing innovation systems, with examples from Latin America.

Initiatives for Agricultural Innovation in Latin America

A notable development is that the World Bank has shifted its direction from an AKIS portfolio to one emphasizing innovations. Its policies are increasingly aimed at promoting technological change in industry and agriculture. The Bank notes that in agriculture, the returns to its investments in agricultural research have generally been very good, with a minimum 175% return on investment; much of the success in meeting global good needs can be attributed to these investments (World Bank, 2005). “Still,” according to the Bank, “in many countries productivity of research programs is low. Despite increases in the availability of new knowledge and technologies, research systems do not necessarily increase the number of innovations reaching the farmer or the marketplace.”

The Bank argues that innovation systems must ultimately be demand-driven with closer linkages to clients, must become more efficient, and must develop sustainable sources of financing (World Bank, 2005). This shift by the Bank is toward a new way of thinking and acting in favor of agricultural research and development.

A glance at initiatives for agricultural innovations fall into diverse categories: technical, managerial, commodity and institutional. *Technical* innovations seek to promote new research or science as well as innovations in tools and processes for producing knowledge.

Managerial innovations aim to help producers improve their land and business efficiency and assets including those relevant to their performance and skills capacity. *Commodity* innovations focus on a particular commodity market and how to make it more profitable for farmers.

Institutional innovations include initiatives by international organizations and countries seeking to implement new policies in existing organizations. These various initiatives often overlap, combining institutional and commodity initiatives with managerial and technical initiatives.

A number of international and national bodies have instituted programs either regionally or nationally to advance innovations systems. Examples of region-wide systems are Red SICTA in Central America and PROCIANDINO in the Andean countries. As for country-wide national bodies, prominent examples in Latin America are the Fundación para la Innovación Agraria (FIA) in Chile and of course Fundación Produce and COFUPRO in Mexico.

Red SICTA. The Red SICTA, run by the Swiss Agency for Development and Cooperation (SDC) in conjunction with the Inter-American Institute for Cooperation on Agriculture (IICA), focuses its efforts in Central America, financing innovative proposals by producers in conjunction with knowledge generating institutions, industry, and private and public institutions. Red SICTA supports mostly technological and commodity innovations, but also sponsors demand-driven innovation in farming technology and production systems.

PROCIANDINO. PROCIANDINO is a collaborative effort by IICA and the Inter-American Development Bank, the IDB. As the project name suggests, it works with member countries from the Andean Group. Member countries work to advance technology that has a potential for commercialization. PROCIANDINO supports mostly technological and managerial innovations, and their projects

tend to develop an industry-wide approach rather than a producer-oriented approach.

Chile—Fundación para la innovación agraria (FIA). FIA functions under the Chilean Ministry of Agriculture to promote innovation in agricultural activities through the Chilean nation. It produces and distributes information to producers, and is in charge of financing projects. A full listing of projects financed, by commodity, can be found in their website (<http://www.fia.cl/>). The main goal of FIA is to contribute to agricultural innovations so as to modernize and strengthen the Chilean rural economy. They employ technological and managerial innovations along with a demand-driven approach. In general, they tend to promote adoption of technologies developed elsewhere that might prove applicable to Chilean agriculture.

Mexico—Innovative Research on Innovation. A demand-driven agricultural development approach has been instituted in Mexico. Fundaciones Produce represents farmer commercial organizations. The Foundations operate in each of Mexico's 31 states, and are coordinated by COFUPRO, a partnership body established by the Government. One of the Fundaciones Produce has funded a mapping of the social network that emerged in their lemon agri-chain. They identified a group of farmers, and collected detailed technical and economic information on their adoption and use of innovations. With this information, they developed an "innovativeness index," which includes each farmer's propensity to innovate and his or her importance as a source of information for other farmers. They plan to use this experiment to change the way extension agents select their contacts. This is an interesting example of indigenous research issuing from a demand-drive approach to agriculture.

Now let's review: What have we learned from the preceding discussion of frameworks and initiatives for agricultural innovation?

1. That international national organizations and national states are shifting their strategies toward agricultural innovation and demand-driven approaches to development.
2. That nonetheless the AKIS/RD approach to knowledge system institutions continues to be viewed as an important component of AIS.
3. That countries need to change from being "technology producers" to becoming "technology users" with an understanding of development as a shift away from "traditional" sectors and toward "high tech" sectors
4. That initiating research into innovation practices is an important development if countries are to understand the best means of promoting the adoption innovations.
5. That demand-driven systems must be balanced by a national strategy that operates for the public good and responds to the problems of poverty as well as those of the environment.

Let us now turn to the question of what constitutes an innovative country?

Strategy, Alliances and Governance

Within the context of the agricultural knowledge domain, I have already alluded to the need for research and extension, capacity strengthening, system coordination, and the promotion of interconnectedness between public and commercial institutions. Nonetheless, these elements are likely to occur only if the country itself is ready to learn from those inside and outside its boundaries. In a global marketplace where change is a constant, this means that a country must be ready to reconsider and possibly reform its institutions, commodity orientations, managerial processes and its technical traditions.

A favorable and responsive policy environment is crucial, especially one that supports the advancement of agricultural knowledge and is dedicated to fostering

agricultural and rural development. This means enacting a national policy or national agreement among its institutions and its people, to promote innovation.

A national strategy. A national strategy requires reform. And reform involves the implementation of institutional changes and new structures for supporting innovation. It also means implementing the necessary conditions for expressing demand for innovation. At issue is a continuing exploration of partnerships and networks to advance innovation, as figures 2 and 3 indicate. Finally, reform is inadequate without a financial base, and so an agenda is needed to secure long-term financing for innovation.

National reform means taking risks. In their examination of the impact of economic reforms on the performance of the agricultural sector in Latin America, economists Lederman and Soares (2001) point out that reforms tend to have the immediate effect of reducing productivity growth in agriculture. This reduction in productivity is recovered only after approximately three and one half years. However, after this period, productivity tends to grow at rates usually higher than the ones observed in the pre-reform period, compensating for the transition period of reduced growth. They note also that reforms on the average tend to be progressively intensified over time. Their conclusion supports taking the risk of reform.

Aligning agricultural institutions. A national strategy to promote agricultural innovation will likely be strengthened by adoption of the notion of an agricultural innovation system, or AIS. However, I hypothesize that AIS works best where an AKIS/RD system is functioning, where there is *strategic institutional alignment* among public, private and third sector agricultural knowledge and information institutions and organizations. As noted, strategic alignment operates when the entities in the agricultural knowledge system of institutions and organizations aim to accomplish specific

goals set down in a national innovation strategy, which means that these entities agree on the markets to be served, the financial and support capabilities required, and the programs needed to be developed. Of course, these specific strategic goals will be pursued in addition to the functions normal to their general mandate.

Strategic Governance. Underlying any set of guidelines and strategies is the condition that makes them operative: *strategic governance*. By that I mean *governance that operates with a view to responding to the demands of a national strategy and insists on results and accountability in line with that strategy while making sure that appropriate users and stakeholders are involved*. This should not imply that public sector institutions alone would provide all respective public goods and services. The private and the third sector need to be involved in various ways, such as through partnership arrangements, contracting and regulation. If one distinguishes between the provision and the financing of services, it becomes clear that there is a wide range of alternative institutional options. Indeed, a review of extension reform in more than 40 developing countries (Rivera & Alex, 2003) showed that the reform efforts of the past decade have indeed led to a wide variety of institutional arrangements involving the public sector, the private sector, NGOs and farmers' organizations.

Despite the call for pluralism and privatization, I believe it is important to be a bit of a contrarian, and to recognize once again the importance of the nation state. My reason for highlighting governance, and specifically strategic governance, is to argue that the neo-liberalism idea of free markets, free trade, and open economies is over developed. It was advanced in reaction to the welfare state, and tends to promote individuals against the state. Nevertheless neo-liberalism overlooks the fact that the state is still the crucial actor in development and in initiating national strategies that

incorporate new reforms and respond to the initiative of new frameworks. The often declared demise of the nation state is a myth. Government continues to play the crucial role in developing pluralistic, innovative systems (Rivera & Alex, 2004)

Final Comment

So what makes one country more innovative than others? I suggest that it depends on creating a *national vision and strategy*, promoting *institutional alignment* around specific goals that nonetheless may (and probably will) change over time, and maintaining *strategic governance*. These elements flourish when they have their roots in a framework that aims to develop an innovation system.

References

- Balzat, M. (2002). The theoretical basis and the empirical treatment of national innovations systems. *Volkswirtschaftlich Diskussionsreihe*, Beitrag Nr. 232, Dezember. (Augsburg, Germany).
- Breschi, S., & Malerba, F. (1997). Sectoral systems of innovation: Technological regimes, Schumpeterian dynamics and spatial boundaries. In C. Edquist (Ed.), *Systems of innovations: Technologies, institutions and organizations*. London: Pinter.
- Bunting, A. H. (1986). Extension and Technical Change in Agriculture. In: Jones, G.E. (Ed.), *Investing in rural extension: strategies and goals*. London & NY: Elsevier.
- Chipeta, S., Zellweger, T., Pesche, D., & Christoplos, I. (2005). *Demand-driven agricultural advisory services*. Neuchâtel Conference held in Berlin, Germany, November. Lindau, Switzerland: Swiss Center for Agricultural Extension and Rural Development.
- Edquist, C. (1997). Systems of innovation approaches – Their emergence and characteristics. In C. Edquist (Ed.), *Systems of innovations: Technologies, institutions and organizations*. London: Pinter.
- Ekboir, J., & Parellada, G. (2002). Public-private interactions and technology policy in innovation processes for zero tillage in Argentina. In D. Byerlee & R. Echeverría (Eds.), *Agricultural research policy in an era of privatization*. London: CABI.
- FAO/World Bank. (2000). *AKIS/RD: Strategic vision and guiding principles*. Rome: FAO.
- Kellogg Commission on the Future of State and Land Grant Universities. (2000). *Renewing the covenant: Learning, discovery, and engagement in a new age and a different world*. Washington, DC: NASULGC.
- Lederman, D., & Soares, R. R. (2001, draft). *A note on the impact of economic reforms on the performance of the agriculture sector in Latin America*. Washington, DC: World Bank.
- Mytelka, L. K. (2004). *Building innovation systems in natural resource-based industries*. The Hague, The Netherlands: United Nations University, Global Innovation Policy Dialogue.
- Nagel, U. J. (1979). Knowledge flows in agriculture: Linking research, extension and the farmer. *Zeitschrift für Ausländische Landwirtschaft*, 18(2), 135-150.

- Rivera, W. M., & Alex, G. (2003). *Extension reform for rural development* (5 vols. in 1). Washington, DC: World Bank. Retrieved from [http://Inweb18.worldbank.org/ESSD/ardext.nsf/11ByDocName/ExtensionReformforRuralDevelopmentVolume1DecentralizedSystemsCaseStudiesofInternationalInitiatives/\\$FILE/Extension_Reform_V1_final.pdf](http://Inweb18.worldbank.org/ESSD/ardext.nsf/11ByDocName/ExtensionReformforRuralDevelopmentVolume1DecentralizedSystemsCaseStudiesofInternationalInitiatives/$FILE/Extension_Reform_V1_final.pdf)
- Rivera, W. M., & Alex, G. (2004). The continuing role of government in pluralistic extension systems. *Journal of International Agricultural Education and Extension*, 11(3), 41-52.
- Rivera, W. M., Alex, G., Hanson, J., & Birner, R. (2006). Enabling agriculture: The evolution and promise of agricultural knowledge framework. *Proceedings of the 22nd Annual Conference of the Association for International Agricultural and Extension Education, Clearwater Beach Florida*, 580-591.
- Rivera, W. M. (2003). The invisible frontier: The current limits of privatization and decentralization in the developing countries. In F. Brewer (Ed.), *Agricultural extension: An international perspective*. Wallingsford, MA: Erudition Press.
- Rivera, W. M., Qamar, M. K., & Mwandemere, H. K. (2005). *Enhancing coordination among AKIS/RD actors: An analytical and comparative review of country studies on agricultural knowledge and information systems for rural development (AKIS/RD)*. Rome: FAO. Retrieved from http://www.fao.org/sd/dim_kn3/kn3_050901_en.htm
- Röling, N. (1990). The agricultural research-technology transfer interface: A knowledge systems perspective. In D. Kaimowitz (Ed.), *Making the link: Agricultural research and technology transfer in developing countries*. Boulder, CO: Westview Press.
- World Bank. (2005). *Agricultural research*. Retrieved from <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTAR>

**Tools of the Profession
Book Review**

Cynthia Barnett, PhD Candidate
Iowa State University
Department of Agricultural Education and Studies
223A Curtiss Hall
Ames, IA 50011-1050
E-mail: cyndib@iastate.edu

Gemo, H., Eicher, C. K., & Tecler, S. (2005). *Mozambique's experience in building a national extension system*. East Lansing, MI: Michigan State University Press. 128 pages. \$13.95 (USD).

In the preface of this book, *Mozambique's Experience in Building a National Extension System*, Professor Dr. Gustav Düvel writes about the importance of a synergistic relationship between the necessary elements within extension. Düvel writes, in part, that the success of an extension system is largely a function of the dynamic interaction of a multitude of factors forming part of the total situation, including the physical, social, cultural, socio-economic and organizational environments and the way these are perceived. (p. x)

Gemo, Eicher, and Tecler (2005) state that the purpose of their book is “to chronicle the evolution of extension in Mozambique over the past seventeen years from 1987 to 2004...” (p. xiii). In doing so, they discuss the “six basic extension models” (p. xii) currently used in Africa: the public extension model, the commodity extension model, the Training and Visit model, the non-governmental (NGO) model, the private sector model, and the Farmer Field School model. The authors chose to begin their discussion with events of 1987, the year the Mozambique government established a national public extension system even though, due to the civil war, the extension system did not become functional until 1992.

For those who may have a limited understanding of Mozambique’s history, this book might require independent research into that history to better understand the book’s context. For example, readers may not know about the human degradation and destruction of war that contributed to Mozambique’s personal and governmental conflicts, including gaining independence from Portugal in 1975, and the “total situation” about which Düvel speaks. Racial unrest and upheaval precipitated mass departures of foreigners including the Portuguese, who left the country, its people, and its economy bereft of essential machinery, resources, and skills. The book describes how Mozambique overcame these conditions and how, over 17 years, the country built an extension system to help its people make a successful living for themselves using their limited resources and implementing technological innovations.

In the introductory chapter, Gemo et al. give a brief background regarding the current extension situation in Mozambique as well as provide justification for the book. Additionally, the authors indicate the book will provide discussion about Mozambique’s current agricultural economics, the creation of “public, private, and non-governmental extension providers, ...the role of the

government, external financiers, and relevant services...and the extension experience from the past seventeen years and draw lessons for the future of extension in Mozambique” (p. 8) but do not discuss whether these current practices are an improvement over the procedures before 1987.

In Chapter two, the authors illustrate the crises Africa faced while attempting to build partnerships—between extension workers, scientists, and governmental representatives—needed to increase agricultural productivity. They also present five African experiences as learning opportunities to Mozambique as means to help the nation improve the establishment of these rural institutions because “Mozambique should devote primary attention to crafting a system of rural institutions that is compatible with its own history, culture, agrarian structure, political ideology and developmental strategy” (p. 15). In contrast to the book’s earlier lack of historical and cultural background, this chapter discusses relationships, dynamics, and power struggles at a level of detail that is interesting while adding a layer of complexity which helps to explain why extension initiatives took such a long time to come to fruition in Mozambique.

The initiations of both a private extension service by local NGOs and a public extension service by the local government during the years of 1987–1992 are the focus of Chapter 3. This chapter concentrates on the public extension service, the population it was designed to help, the delivery model the service used, and the problems the facilitators encountered. In addition, different types of agronomic technological innovations are suggested to help farmers improve food crop management. This discussion provides solid evidence to the theory that “the general objective of public extension has always been ‘to contribute to the increase of agricultural production and productivity’” (p. 23). The second section of the chapter

discusses the resources available to the public extension service. Extension's own employees had "an acute scarcity of qualified technicians in agriculture" (p. 29), external funding was from "donors [who] financed public extension heavily" (p. 31), and production support services "were quite weak" (p. 32). These resource-related factors, as well as the role private extension plays in Mozambique, are discussed in detail in this chapter. However, again, because of the complex relationships between the organizations and donors mentioned, readers may have a hard time following all of the networks and interactions.

Gemo et al. begin Chapter 4, "The Emergence of NGOs in Extension and the Changing Roles of Public and Private Extension: 1993–1998," by sharing a movement towards a more positive future for the Mozambique nation: "The declaration of peace in 1992 ushered in the second phase of the national extension system from 1993 to 1998 and public and NGO extension workers helped refugees return to their villages, resume farming and rebuild livestock herds" (p. 37). When reading about SG 2000—"an international NGO committed to accelerating agricultural development in Africa" (p. 45)—readers will get an in-depth look at how one NGO helped empower the Mozambique population with the innovations needed to continue successful agricultural development. Moreover, the authors share how the public extension service implemented the long-term strategic and preliminary Extension Master Plan. The rest of the chapter addresses the expansion of public extension, and as a result, how the extension system seized the opportunity for diffusion of agricultural innovations while leaving open questions about the roles and influence NGOs may have on the future of agricultural extension in Mozambique.

Chapter 5 explains the National Program for Agricultural Development (PROAGRI) period from 1999–2004, and Chapter 6 provides an in-depth evaluation of

these issues. The authors attempt to handle the daunting task of describing all of the elements encompassing PROAGRI, the National Program for Agricultural Development, a plan developed to "coordinate pooled donor investments in the agricultural sector" (p. 50). This chapter provides an in-depth look at the "first extension master plan" (p. 51), the unification of extension programs in Mozambique, and Mozambique's progression toward moving the responsibility of executing extension at the community level. The authors present the advantages of accomplishing these goals as extension moved from the private sector to the public sector. Other areas of discussion include the establishment and importance of building new working relationships with several different networks, the practice of outsourcing extension, and the associated costs. This chapter contains a huge amount of information, and the reader may become confused or lose interest in all of the details. The purpose of this portion of the book may have been better served had the authors separated it into three more concise sections.

In the next chapter, "Looking Ahead: Critical Issues for Policymakers, Extension Managers, and Donors," the authors indicate the areas that are important to the future of Mozambique and delineate specific challenges to funders, policymakers, and administrators involved at the extension level. Detailed problems and trials are identified and closely examined to assist with the provision of quality services to the Mozambican nation. The details in this chapter are focused and serve an important purpose in providing insight to anyone who has a vested interest in ensuring Mozambique is successful as it begins the second Extension Master Plan (2005–2009).

The “Summary and Conclusion” chapter provides a synopsis of where Africa has been and where it is heading, particularly Mozambique. The authors suggest that

agricultural research is the driving force for generating new technology for extension workers who have a strategic role to play in speeding up the adoption of new technology as well as providing information on health, marketing and nutrition to village people. (p. 104)

To accomplish this, the authors stress that it is essential to hire well-trained extension professionals and scientists so they can diffuse the technology needed in Mozambique for her people to be successful and healthy. Gemo, Eicher, and Teclerian postulate that extension in Mozambique needs to envision itself as an integral part of “an interactive agricultural knowledge triangle, which is composed of research, extension, and agricultural higher education” (p. 105). One major element that is crucial to the success of this concept is accountability. The ultimate success of Mozambique’s future lies with the government, the donors, the extension professionals, but especially with the people.

The authors depict in great detail the struggles that Mozambicans faced in the past and summarize the continual challenges encountered daily by many stakeholders,

including government officials, policymakers, extensionists, industrialists, and agriculturists. They also accomplish the book’s purpose as stated in the preface and its goals outlined in the introductory chapter by providing an in-depth—albeit, at times, confusing by virtue of insufficient historical and cultural context—look at Mozambique’s experience in creating a national extension system. The authors obviously have extensive knowledge regarding Mozambique’s background and struggles. The book is, at times, hard to follow, especially when the authors discuss complex issues, which lends itself to readers who either already have or are willing to conduct the research necessary to obtain a basic understanding of the history of Mozambique and its international agricultural development status. In fact, *Mozambique’s Experience in Building a National Extension System* might be best suited for specialists in agriculture in sub-Saharan Africa who already have a thorough understanding of the complexities of international agricultural extension services. Similarly, because the book presents a clear picture of the realities of one country’s struggles for food and survival, it might also be a useful resource for academics who are engaged in topics related to international agricultural development and the impact extension efforts could have on a country’s humanitarian gains and economic successes.

Association for International Agricultural and Extension Education
22nd Annual Conference

Professional Paper Presentation Abstracts

Editor's Note: The following abstracts, listed by primary author's last name, were derived from professional papers presented at the 22nd Annual AIAEE Conference. Complete papers are available (Web) at <http://www.aiaee.org/2006/index.html>

Attitudes of Rural People in Mali and Nigeria to Human Waste Reuse in Agriculture

Mercy Akeredolu, University of Mali

Ibiyemi Ilesanmi and Ralf Otterpohl, Hamburg University of Technology, Germany

Maintaining the quality of the soil is of paramount importance to food production and an essential component of sustainable agriculture. Farmers through the ages have recognised the importance of fertilisers in improving and maintaining soil fertility. Chemical fertilisers have gradually taken over from natural fertilizers as soil maintenance agents with overall impressive results. However, using chemical fertilizers has its attendant drawbacks which include environmental pollution especially of surface waters that receive runoffs during rainfalls and ironically degradation of the very soil it should improve. This implies chemical fertilisers are not a universal one stop solution to the challenge of improving soil fertility. Human waste due to its basic components, which are largely similar to those of chemical fertilizers, offers a promising alternative as a source of valuable plant nutrients in agriculture. Properly practiced, human waste reuse contributes significantly to issues of food production, poverty reduction, sanitation, environmental and public health protection. The issue of social acceptance is one of the several issues that must be tackled in order to successfully institute the practice of human waste reuse in agriculture. Even if concept and technologies exist, if there is no acceptance there can be no successful practice. This paper looks at and presents the social acceptance of human waste reuse in agriculture in some communities in Mali and Nigeria. Results from both countries in this study revealed knowledge of both manure and human excreta use in farming. However, attitudes to human excreta use are mixed and predominantly influenced by traditional and religious beliefs.

Bringing Stakeholders into Agricultural Extension Reform Agenda: A Participatory SWOT Analysis of the Trinidad National Agricultural Extension Service

Adewale J. Alonge, Miami-Dade County Public Schools, Florida

The author advocates a major shift in the current top-down, externally-imposed approach to the institutional reform of public sector extension, to a more participatory and stakeholder-empowering framework. The study uses a participatory qualitative instrument of SWOT analysis to identify the perceptions of extension personnel in Trinidad regarding the institutional strengths and weaknesses of the national extension services and of the new opportunities and threats that would impact its survival and relevance in the future. Factors identified as strengths included a well-endowed human capital base, use of information technology, strong farmer organizations and regional collaboration. Institutional weaknesses included inadequate funding, poor government policy, and surprisingly decentralized training, which was the major extension reform platform in Trinidad in the 1990s. New opportunities were identified in youth program, expansion of clientele base to non-traditional commodity groups and on building the capacity of farmer organizations. Finally, privatization and the loss of public sector extension personnel to the private sector were listed as threats to the institutional survival of the national extension system. The paper concluded by noting that the public sector would probably remain a major player in the delivery of extension at least for the foreseeable future. It recommends that in order to remain relevance, public sector extension service must become more strategic-thinking, learning organizations, attuned to changes in its operational environment and nimble enough to adapt to these changes.

Understanding Effects of Institutional Partnerships on Rural Groups in Improving Livelihoods in Kenya

David M. Amudavi, Egerton University, Kenya

Margaret M. Kroma, Cornell University, USA

Kristin Davis, International Food Policy Research Institute, Ethiopia

This paper focuses on the effects of institutional partnerships on farmers' groups to leverage livelihood outcomes in Kenya. The key question addressed is: Do partnerships between agencies and rural groups enable the groups to generate beneficial outcomes for rural households? This is important in understanding the viability of rural organizations in a context marked by government and market failures. Data were collected through a household survey and focus group discussions. The findings indicate that partnerships matter to performance of groups in offering goods and services. However, not all group types are equally likely to spawn partnerships. Partnership building is more likely in supra groups making them realize more value out of collaborations, but there remains untapped potential in these groups that could be realized through targeted partnerships and those gaps are likewise greatest with supra groups. This is revealed by an increase in the variance of local groups' performance by 2.5% and in supra groups by 10.2% when respondent preferred partnerships are analyzed. Finally, the main gap comes from the need to improve access to finance necessary to invest and expand productive assets. The gap also comes from absence of a coordinating mechanism that identifies potential partners and facilitates allocation of responsibilities and resources to groups. The study demonstrates the critical import of groups as sustainable vehicles for agricultural, natural resources and rural livelihood extension. Future partnerships to enhance rural groups' capacities must be different from present practice, both in nature of partnerships and in the types of activities promoted.

Challenges and Prospects of Infusing Information Communication Technologies in Extension for Agricultural and Rural Development in Ghana

Festus Annor-Frempong and Joseph Kwarteng, University of Cape Coast, Ghana

Robert Agunga, The Ohio State University, USA

Moses M Zinnah, Winrock International

Information and Communication Technologies (ICTs) can be cost-effectively and practically employed to facilitate information delivery and knowledge sharing among farmers, extension agents and other stakeholders. This paper presents aspects of the study that sought to examine the challenges and prospects of infusing ICTs in extension for agricultural and rural development in Ghana. The study used qualitative and quantitative procedures to collect the data from 291 extension agents and ICTs service providers such as internet cafes, computer training and business centers, computer firms, and information centers in the selected districts capitals in Ghana. Means, percentages, frequencies, and standard deviation were generated to describe the general trend of the data. The study revealed that extension agents have high and positive demand for ICTs for extension. There is a prospect for involving private and public institutional sources in extension delivery. The respondents have high knowledge about the advantages of using ICTs which will probably enhance their application of the technologies in extension. However, extension agents need ICT training opportunities, infrastructure, financial resources and technical backstopping to enhance the use of ICTs in extension. The study recommends a systems approach involving major stakeholders such as training institutions, Internet service providers, research institutions, farmers, policy makers to collaborate in the use of ICTs for extension.

Challenges in Community Forestry Management: A Case Study of the Indigenous Tribal Village of Santa Teresita in Bolivia

Matt Baker, Texas Tech University
 Carlton Pomeroy and Ann S. Q. Liberato, University of Florida
 Diane Mashburn, Texas Tech University

This study documents the experiences of the Ayoréode community of Santa Teresita in implementing a forest management plan. This multidisciplinary project has centrality to the authors' fields of study: (1) Agricultural Education – Community Planning and Needs Assessment; (2) Interdisciplinary Ecology – Forestry Management; and (3) Sociology – Community Development. The theoretical framework for this study involves examining community from a social interaction perspective. In this perspective, there are three critical elements: a locality, a local society, and a process of locality-oriented collective actions (Wilkinson, 1991). Data collection for this study resulted from a Participatory Rural Appraisal session, participant observation, natural conversations, interviews with key informants, a census survey of the community, and an examination of existing records. The researchers found that the community has the knowledge capacity to manage their forest but lack financial capital, infrastructure and communal management skills. In the end, the community did not enact their forest management plan due to internal conflict. The analysis shows that, indeed, it is a small minority that controlled the resources. Consequently, the researchers conclude that there is little collective action. The question that remains is whether commercialization of community forest products is an effective strategy for sustainable development in Santa Teresita. The answer is maybe. They must be able to improve harvesting techniques, reduce post-harvest losses, reduce costs of production and improve management of the resource. This means that the communities are going to need technical assistance as they plan, implement, and monitor their production.

Sustaining Democratic Governance in Ghana: The Interdependence of Health, Agriculture and Extension

John K. Boateng, Connie C. Flanagan, and Leslie Galloway, The Pennsylvania State University

A recent USAID report showed that, although the health status of Ghanaians has improved in recent decades, many health challenges still remain. Examples include: a) the maternal death rate which in some parts of Ghana, is 800 per 100,000 live births; b) malaria which is the basis for 40% of outpatient visits and 25% of the mortality of children under six years of age; c) inadequate and insufficient prevention efforts, poor nutrition and lack of early and effective treatment. In addition, about 400,000 Ghanaians live with HIV/AIDS with over 50,000 AIDS related orphans. Moreover, access to quality health services at the community level presents a major constraint for providing quality health care to community people. With respect to agriculture, despite the general improvement in cereal crops and other basic staple food crops, agricultural production fluctuates immensely from year to year and from region to region. In this paper the associations among gender, educational and health disparities and type of place of residence are investigated. Case studies of successful health and agricultural interventions that took place in Ghana in past are explored. The success stories are brought into perspective with the current health and agricultural challenges facing Ghana and possible solutions are explored.

Gender Socialization of Pre-teen Youths in Ghana: Alternative Approaches for Extension

John K. Boateng, Connie C. Flanagan, and Leslie Galloway, The Pennsylvania State University
 Jemima Yakah, Texas A&M University

Agricultural and Extension education in Ghana relies heavily on traditional visit and transfer methods to impart new knowledge to farmers. Much effort and resources are thus expended to extend agricultural information to the farmer at his farm. Not much is done at the family level to identify social problems that can hinder the farm family from achieving their maximum potential. Although agriculture remains the backbone of most of Ghanaian economies, the gendered aspects – such as the sexual division of labor, and sex-differences in access to land and credit, and even marketing of produce – receive little attention

and continue to hamper the development of the sector. This paper presents evidence of how boys aged from 9 to 12 years, form notions and expectations of masculinity around household tasks and how boys differ in responsibility for major decision making regarding childbirth, contraception and safe sex from girls of similar age. The authors explore alternative approaches that involve bringing young people to a better understanding of themselves. We also discuss how extension can be remodeled to address some of the problems faced by the youth in the agricultural and other sectors in Ghana.

The Role of Research in Effective Policy Making

Pat Bogue, Broadmore Research, Ireland
Jim Kinsella, University College Dublin, Ireland

Research has the potential to be an important influence on policy. This article outlines an approach taken in seeking the inclusion of research recommendations into policy. A model of the process is developed and the steps involved are outlined. Researchers must engage with the key policy actors, the inclusion of research findings into policy is a difficult task but necessary because good research will not succeed in influencing policy, simply because it is good. Research has a key role to play in, informing policy makers and determining policies which progress the EU aim of a living countryside rather than detract from it.

Advisory Services in Transition: The Challenge of Change

Pat Bogue, Broadmore Research, Ireland
James Phelan, University College Dublin, Ireland

Extension services must continually adapt to the changing agricultural environment and to changes in farm family circumstances in order to remain relevant. Change is difficult to implement particularly for large scale public sector extension agencies. The Irish public sector extension agency, Teagasc, developed a new and dynamic advisory programme 'The Opportunities for Farm Families Programme' in an effort to support farm families in adjusting to their changing agricultural environment, particularly to reforms in the Common Agricultural Policy. The purpose of this paper is to outline the key challenges faced by Teagasc in introducing this new advisory programme and approach to the delivery of advice. These challenges included: convincing staff of the new approach and achieving 'buy-in'; identifying and clarifying misconceptions about the programme; adapting as an organisation to selling a programme where there is not farmer led demand (but there is a need); changing the nature of the provision of advice from reactive to proactive; prioritising and managing workload; and managing and achieving programme targets. The process and the approach used in the implementation of the programme need as much focus as the actual programme or product around which the change is centred. Getting the vision right is only part of the challenge; effectively communicating that vision within the organisation is critical. Change is ongoing and inevitable but to be sustainable, it is important that it is approached and managed positively (encouraged and supported) rather than negatively (forced and imposed).

An Examination of International Studies at 1862 Land Grant Institutions

Shannon E. Brooks, Oregon State University
Martin J. Frick, Montana State University
Thomas H. Bruening, Penn State University

The purpose of this study was to determine the status of international agricultural education at 1862 land grant institutions, by answering the question, what are our 1862 land grant institutions doing to integrate international studies into their undergraduate agricultural curricula? Two investigations were conducted, (1) a website content analysis and (2) an international director survey. A website based content analysis was conducted to determine the contents of 57 land grant institution's colleges of agriculture' websites identified current trends in agriculture regarding international themes. The programs identified were: (1) student study abroad; (2) faculty research and/or programs; (3) graduate research and or programs; (4) training and/or visitors; (5) international students on campus; (6) foreign agreements and/or contracts; and (7) majors, minors, certificates, curriculum, and course content. All questions were based on information

for the 2003-2004 academic year. Of the 57 institutions surveyed, a total of 31 surveys were submitted for a response rate of 54%. The results of the content analysis and the survey indicated that the nature of international agriculture programs is predictable, yet approaches, support and implementation vary widely between institutions. Despite the high level of international training for faculty and the strong belief in study abroad programs, very few agriculture students participate in study abroad programs at 1862 land grant institutions.

Financial Management Practices on Irish Dairy Farms: The Role Played by Extension

Ailish Byrne, Agricultural Manager, Ulster Bank, Ireland

Dermot J. Ruane, National University of Ireland, Dublin

Tom Kelly, Kildalton College, Ireland

With the advent of increased competition, adjustments to the CAP (Common Agricultural Policy) and the future globalisation of the agricultural sector, Irish farmers are involved in an increasingly competitive business environment. These changes have brought into focus the need for farmers to improve their business management as well as to continue best practices in production husbandry. Consequently, identifying the factors that may contribute or lead to an increased uptake in formal financial recording, planning and analysis systems among Irish farmers was the primary focus of this research. The literature on farm financial management highlighted a number of issues in relation to the slow adoption of farm financial management techniques among Irish farmers. The results in this paper illustrate the financial management practices in the Irish dairy farm sector and the link between these practices and their impact on the profitability of Irish farms was also highlighted. The farm, personal and financial management characteristics of the dairy farmers in this study who were most efficient in terms of costs and profit and who were most committed to the financial management aspects of their business.

Traditional Folk Media: A Potentially Effective Communication Tool in Rural Area

Rajendra Chapke, Central Research Institute for Jute and Allied Fibres, India

Rekha Bhagat, Indian Agricultural Research Institute, India

Communication pattern of any society is a part its total culture and it can be understood in the context of its social structure, organization and institutions. The process of communication is as old as mankind. Every country has its own traditional and folk media communication, which serves as significant tools in the process of motivating the people in the desired direction. On the other hand, the modern mass media are not performing the role expected from them due to some limitations. With this background this study was conducted in Nagpur district of Maharashtra state of India. Three villages namely, Ghorad, Budhala and Kaniyadhhol were selected purposively in which traditional media shows were performed regularly and five most popular traditional media were selected viz. Tamasha, Bhajan, Kirtan, Dhandhar and Quawaly. Majority of the respondents were visitors of Tamasha (71.59%) and Bhajan (59.94%). Almost all preferred place was village itself (71.59 to 100%) for viewing these programmes. The shows of Dhandhar (100%), Tamasha (77.22%) and Kirtan (76.44%) were usually performed on the festivals like Diwali. Most of the viewers (61.61%) were liked of Tamasha due to lively performance (40.50%) followed by Bhajan (46.62%) due to contents covering familiar religious themes (85.68%). Most preferred themes by the viewers through these media were, on social development including agriculture and patriotic songs. Almost all Government officials opined that the traditional media programmes are effective and had good impact on rural masses.

Usefulness of Information Sources in the Promotion of Hybrid Rice Program in the Philippines

Dario A. Cidro, Philippine Rice Research Institute, Philippines

Rama B. Radhakrishna, The Pennsylvania State University

A variety of information sources are used in disseminating information to farmers. The usefulness of information sources—print, electronic, and human is very important to make informed decisions about

the effectiveness of each information source. A number of studies have been published relative to the usefulness of information sources as perceived by farmers and extension agents. The Hybrid Rice Program (HRP) identified 10 key components for improving rice production in the Philippines. Of the 10 key components, two were related to information support service and training. In information support service component, promotion of print, broadcast, electronic media, and information campaign were identified as key strategies. This study examined the usefulness of information sources in the promotion of hybrid rice program as perceived by farmers and extension agents. Both farmers ($n = 257$) and extension agents ($n = 132$) responded to a three-section instrument. Data were collected using personal interview method for farmers and hand delivered survey for extension agents. Findings from the study revealed that both farmers and extension agents view electronic media such as radio and television more useful for learning about hybrid rice promotional activities. Leaflets/brochures and demonstration were also rated as “very useful” by both farmers and extension agents. Significant differences were found between farmers and extension agents relative to the usefulness of information sources. For all the 15 information sources, extension agents’ ratings were significantly higher than farmers’ ratings. Based on the findings and conclusions of the study, implications for further research and training were offered.

Students’ Perceptions of Learning and Teaching at Lviv State Agricultural University in Ukraine

Wilmara Correa Harder, Thomas H. Bruening, and Anatoly Tmanov, Penn State University

A study was carried out to examine students’ perceptions regarding teaching and learning methods at Lviv State Agricultural University in Ukraine (LSAU). The study establishes benchmarks to be used to improve teaching and learning within the university. The population for the study was composed of 300 undergraduate students at LSAU, Ukraine. The study used a Likert scale of 1 to 5 to prioritize needs and attitudes of respondents. Respondents agreed that they should practice more concepts taught in class ($M = 4.4$) and teachers should experiment with new teaching methods ($M = 4.1$). Respondents agreed that teachers at LSAU are concerned about their learning as students and the lack of government support for the university is lowering the quality of their education. Students perceived that the quality of education declined over the last three years ($M = 4.4$) and that improving the quality of teaching at the university should be a higher priority ($M = 4.3$). Regarding the use of technology, respondents agreed that teachers need to get additional training on using teaching models and equipment ($M = 4.1$). They strongly agreed more computers and computer applications should be used to teach ($M = 4.5$). However respondents were not willing to pay a small amount of money for better computer equipment ($M = 2.5$). Results from the study should encourage instructors and university administrators to explore new teaching methods to engage students in active learning strategies. This study shows agreement between students perceptions of their educational experience and teaching methods used. Results support more interactive learning.

Institutional Arrangements for Increasing the Dissemination Role of Farmer Groups in Agricultural Innovation Systems

Kristin Davis, International Food Policy Research Institute, Ethiopia

Farmer groups are playing an increasingly important role in pluralistic extension systems and agricultural innovation systems. Based upon data collected from individual farmers ($n = 88$) and farmer groups ($n = 46$), this paper shows that farmer groups were disseminating information to other farmers, and that farmers relied upon groups for information. There was a positive correlation between the number of groups that farmers were in and the number of other farmers to whom they disseminated information. Factors for success in group dissemination included type of group (project-supported or not), participation by members, membership in the Meru Goat Breeders’ Association, and linkages with outside entities. Linkages through the project and to local and external agencies are thus an important factor in increasing the dissemination role of farmer groups, and should be encouraged. Support from external institutions also seems to play a role. Other suggestions to increase the dissemination role of farmer groups include increasing the capacity of groups, individual farmers in the groups, and local government institutions. Mechanisms to make it easier for groups to form include waiving registration fees in some cases,

allowing groups to register through more local entities such as the church or the local government, and waiving requirements for by-laws and a written constitution where appropriate. Finally, the establishment of a clearinghouse or standard operating procedure whereby groups can obtain development assistance and development players can identify established groups to take part in projects is suggested.

Perceptions of Farmers Regarding Home Gardening in Promoting Household Food Security in Swaziland

Barnabas M. Dlamini, University of Swaziland, Swaziland
 Khetsiwe Simelane, St. Annes High School
 Keregero J. Keregero, Centre for Development and Empowerment
 Marietta P. Dlamini, University of Swaziland

A descriptive-correlational type of research was conducted to determine factors related to promotion of household food security at the Malibeni area in Swaziland. The study was a census of households under the Buhle Besive Multi-purpose Cooperative Society, Sivukile Association and Intamakuphila Association. The study utilized a valid and reliable structured interview schedule. Descriptive statistics were used to describe data. Correlation coefficients were used to describe relationships. Regression analysis procedures were used to identify characteristics that explained knowledge of farmers on home gardening practices. Findings indicated that farmers regard home gardening important enterprise in household food security, and perceived themselves to be moderately knowledgeable in home gardening practices. Farmers indicated that there are constraints that impede to their ability to apply some home gardening practices, such as lack of opportunity to practice, lack of time to participate actively in home gardening, lack of access to technology, in-availability of credit to buy inputs, inadequate labour, and unaffordable costs of gardening inputs. Relationships among characteristics of farmers indicated moderate, substantial, and very high associations. Characteristics found to explain farmers' perceived knowledge on home gardening practices were involvement in application of gardening practices, educational level, and perceived importance of home gardening.

Success and Competence in Agricultural Business by Retired Military Officers in Swaziland

Marietta P. Dlamini, University of Swaziland
 Hlanhla D. Mabuza, Umbutfo Swaziland Defence Force
 Barnabas M. Dlamini, University of Swaziland

A descriptive-correlational research was conducted determining relationship between competence and success in agricultural business of the Umbutfo Swaziland Defence Force (USDF) retired military officers. A questionnaire was developed for both competence and success measures and characteristics of respondents. Validation and pilot tests were conducted. Data collection used the USDF protocol. Descriptive, correlational and inferential statistics were generated. Findings revealed: most retired military officers were engaged in field crop production, business management, indigenous chicken production, beef production, sheep/goat production, and vegetable production. Areas in which respondents reported to have had high to very high competence in: layer production, agro-forestry, sugar cane production, field crop production, business management, vegetable production and broiler production. Comparisons by levels of competence according to characteristics groupings did not yield any significant difference. Correlations between levels of competence and education groupings showed mostly negative coefficients. Indicators of success in agricultural business were: living in a better house; having bought cattle; assisted extended family members; having clean water; and, providing better education for children. Comparisons by levels of success according to characteristics groupings yielded no significant difference. Correlation between levels of success and education groupings showed negative but low correlation coefficients. Positive substantial correlations existed between competence levels and success in broiler production, honey bee keeping, layer production, rabbit production, and pig production. Positive moderate correlations existed between competence and success in sheep/goats production and fish production.

The Research-Extension-Farmer Interface in the Cassava Industry in the Volta Region: The Communication Link

Prosper Kwesi Doamekpor, The Pennsylvania State University

The study focused on the communication link between farmers, agricultural extension agents and cassava researchers in the Volta region of Ghana. A descriptive survey approach was used to study cassava farmers and agricultural extension agents in five districts. Cassava research scientists in the country's public universities, research institutions and agricultural research stations took part in the survey. A multi-stage sampling technique, involving two steps was used to sample farmers based on the intensity of cassava cultivation in the selected districts. Results show that all three categories of respondents ranked farm visits, method and results demonstrations as most efficient methods to transfer technology. The identified linkage mechanisms were characterized by personal contacts, home and farm visits, mostly by extension agents to seek first hand information about farmers' problems. Group methods that were used included workshops, joint meeting and farmers' training sessions that were organized by extension agents, non-governmental organizations (NGOs), and a few research institutes, notably, the Crop Research and Soil Research Institutes. The results demonstrate that individual and group methods were the most used methods of communicating with farmers, agricultural extension agents and researchers. Mass communication methods ranked low among respondents, an indication that radio, personal letters and print materials were less frequently used. The implication is that mass communication methods, considered to be advantageous in reaching large audience should take into account radio programming that will have relevant agricultural extension messages to benefit extension work.

Prospects for Distance Education Training among Vegetable Producers in Trinidad and Tobago

David Dolly, University of the West Indies, Trinidad and Tobago
Wilhelmina Kissoonsingh, Ministry of Agriculture, Lands and Marine Resources

This study enquired of the option of Distance Education as a mode for delivering agricultural information and training within the Extension services of Trinidad and Tobago. The researchers selected each member of the total population of frontline Extension workers in Trinidad and Tobago for a structured interview. Similarly the researchers selected a population of vegetable producers from the major vegetable growing areas in the country. There were respective response rates of 83% and 80%. There was a significant association between years of Extension agent service and interest in using the facility. Agents revealed interest in a range of topics appropriate for Vegetable production. Both agents and their clients felt that the tool will be useful in their training. Agents identified several support factors which would hinder implementation and which could be alleviated by Extension leadership and management. The first four factors were Funding, Support Service, Availability of resource material and administrative policy. Current sources of information, ownership of information sources, access to information communication technologies and willingness to become involved were attributes which both clients and their agents possess. These are essential first elements for the successful delivery of Distance Education programmes. The assessment provided adequate evidence to suggest that Distant Education can be used among vegetable producers in Trinidad and Tobago. Extension agents can be trained via the method and they can train their clients. In so doing the sources and type of information available to the Agricultural community can be suitably enhanced.

Role of the Work Experience Module in EARTH University's Program of Community Development

Steffany L. Dragon, Hillsborough County Extension Service, Florida
Nick T. Place, University of Florida

Present in the United States, University-Based Extension, has also emerged in the county of Guacimo, Costa Rica by the private, international college of agriculture, EARTH (Escuela de Agricultura de la Región Tropical Húmeda) University. As part of the third-year student curriculum, the Work Experience

Module (WEM), under the direction of the Program of Community Development (PCD) at EARTH University, is an important component of this extension system. Extension is a collaborative effort. Recent focus has turned to international collaborations and forming international partners. While this is important, a unified vision at the grassroots level: among faculty, change agents (students in this case), and farmers, must also be maintained to make extension successful. This paper was generated from the seminal study, "Perceptions of Farmers, Students, and Faculty Regarding University-based Extension: A Case Study from EARTH University, Costa Rica," in order to more clearly present strengths and opportunities for the program. One salient issue was the need for a unified vision and a clear understanding of the role of the faculty, farmers, students and the module itself including how each of the participant groups is expected to benefit from as well as contribute to the module. Some of the more noteworthy roles due to the disparity in opinions whether or not they should or should not be the roles of the participants in carrying out the objectives of the module, and whether or not the stated roles were actually fulfilled by the module through participants are highlighted in the paper.

Institutional Linkages for Community Mobilization and Participatory Development: Principles and Their Acceptability

Gustav H. Düvel, University of Pretoria, South Africa

This paper makes a strong case for the necessity of community linkage structures where participatory development with the ultimate object of community empowerment, self-sufficiency and self-dependency is pursued. Important principles regarding the nature of such a structures were identified by participatory methods and the degree to which they are acceptable or supported were assessed in a countrywide survey involving about one-third of all public service extension workers in South Africa. The survey found wide scale support for the need of the proposed structures as well as for the identified principles. These include a clear differentiation between the coordinating and operational functions, and a coordination of development activities as close to the grassroots communities as possible. For coordinated and integrated development a ladder of linkage structures, extending from the local community up to district and provincial levels is recommended and it is important that partnerships be maintained and not undermined through amalgamation.

Assessing Extension Agent Knowledge and Training Needs to Improve IPM Dissemination in Uganda

J. Mark Erbaugh, The Ohio State University
Paul Kibwika, Makerere University
Joseph Donnermeyer, The Ohio State University

Frontline extension agents' lack of awareness and understanding of integrated pest management (IPM) has been identified as an impediment to effective transfer of IPM strategies to farmers in sub-Saharan Africa. Developing effective inservice educational and training programs is an important method for addressing this problem, but it is a solution which requires the engagement of extension agents in the training needs assessment process. The main purpose of this study was to assess extension agent knowledge of IPM and to determine their priority pest management educational and training needs. An instrument to assess pest management competencies on the basis of knowledge and importance was designed and administered to a sample of 82 extension agents from Eastern Uganda. All 20 pest management competencies were considered to be very important. Weighted discrepancy scores indicated that the three highest ranked training needs were Field Pest Sampling Procedures, Differentiating Crop Diseases, and Knowledge of IPM. Nearly half (46%) of the sample had low levels of IPM knowledge. Comparing the training needs of those with low and acceptable IPM knowledge levels reveals important differences for designing pest management training programs. Based on these findings alternative pest management training programs for extension agents in Uganda are presented.

How do the Russian Citizens of Dmitrov Hills Conceptualize Genetically Modified Foods?

Curtis R. Friedel and Courtney A. Meyers, University of Florida

Nadezhda N. Mamontova, Pennsylvania State University

Tracy A. Irani, University of Florida

The purpose of agricultural biotechnology is to address challenges producers face in the production of food. Through genetic modification, crops have been developed that are resistant to drought, heat, insects, and diseases. Despite varying opinions toward GM foods in and among different countries, the production of GM crops continues to increase. Russia's official stance on agricultural biotechnology has been inconsistent. Russian President Vladimir Putin has named biotechnology as a scientific innovation that will benefit Russian agriculture. However, the Russian Ministry of Agriculture is encouraging the development of an "organic" agricultural market. The decisions of the Russian government will influence the rural Russian population the most by the economic and environmental issues associated with producing genetically modified foods. Opinion polls and surveys have been given to Russians concerning the acceptance of this technology, but little has been done to determine why Russians perceive this technology as acceptable or unacceptable. That is, how do Russians conceptualize genetically modified foods? To answer this question, interviews were conducted in the Russian village, Dmitrov Hills. The qualitative data were analyzed through frame analysis. Three salient frames were found within the data giving evidence to how rural Russians conceptualize genetically modified foods. These frames include: Not ecologically pure; It doesn't concern me; and Trust in science. The researchers also found that most participants did not understand the concept of a genetically modified food, even when given an example.

International Partnerships for the Development of the Specialty Coffee Sector in Rwanda

Samuel Goff, Texas A&M University

The purpose of this paper is to describe the roles that various institutions have played in international agricultural and extension education, especially the revitalization of the coffee sector in Rwanda. Partnerships and teamwork on the part of the American and Rwandan governments, American and Rwandan universities, international non-governmental organizations, and the private sector have radically transformed the Rwandan coffee sector, including the production systems, processing, and marketing. As a result of these favorable partnerships and effective teamwork, many coffee farmers have increased their incomes as much as three-fold, allowing them to send their children to school, improve their houses, and afford medical care. In the aftermath of the genocide, coffee production declined precipitously. Many of the coffee farmers were genocide widows with little income-earning potential. Taking into consideration the record low prices for bulk commercial coffee, their lack of knowledge about high-quality coffee production, and a need for food crops, many farmers pulled up their coffee trees to plant bananas, beans and other food crops. In 2001, a plan for revitalizing the Rwandan coffee sector was introduced by PEARL (Partnership for Enhancing Agriculture in Rwanda through Linkages), a project funded by USAID (United States Agency for International Development). Michigan State University and Texas A&M University are currently implementing the strategic plan of helping farmers, many of whom are genocide widows, establish self-sustaining coffee cooperatives. The cooperatives' high quality coffee is marketed for the specialty coffee markets in the United States and Europe.

An Assessment of the Career Success of Secondary Agricultural Education Graduates at East Azerbaijan Province, Iran

Fatemeh Hemmati, Gholamreza Pezeshki-Raad, and Mohammad Chizari, Iran

The current mission of agricultural education-to prepare and support individuals for careers, build awareness and develop leadership for the food, fiber, and natural resource systems accurately articulates the vision of the future of agriculture. The purpose of this study was to assess the career success of secondary agricultural education graduates. Design of the study was a descriptive survey. The population for this study was all secondary agricultural education graduates ($N = 401$) of Ministry of Agriculture in East Azerbaijan province from 1994 to 2000. Research results indicated 36% of graduates were

unemployed, 30% were employed full time, and 19.2% of graduates were employed part time. About 12.3% of graduates were continuing their education. The greatest number of employed graduates (62.5%) was employed in the none-agricultural sectors and 37.5% were employed in the agricultural sector. Graduates somewhat were satisfied with teaching methods, general courses, especially courses and teachers, and graduates were little unsatisfied with educational aids. According to the findings, there is a significant and positive relationships between graduates' perceptions as to their level of satisfaction in their specially courses with career success.

Serving International Communities: Service-Learning and Teamwork in Ecuador

Alexandria I. Huerta and Pamela V. Morris, Purdue University

This paper will discuss a study that describes the complex process involved towards the incorporation of an international service-learning program being developed at a university in one Midwestern state. The participants in this study were part of an exploratory team comprised of students, faculty, and staff members of a local NGO (non-governmental organization). The exploratory team was charged with visiting several rural communities in Ecuador to identify a site for the future service-learning project. Members of the exploratory team met with key stakeholders in each community to do preliminary needs assessment and assess the feasibility of integrating a service-learning project to address identified community needs. Findings from this study show that comments of the students toward their experience were positive, and reflected their belief in the value of that experience; students felt they received more than they had given, both personally and professionally; students were able to make a connection with a real world community; and faculty members indicated active participation of decision-makers from in the community and a challenging learning environment are the two key factors necessary for implementation of an international service-learning project.

From Novosibirsk Russia to Texas: A Role for Agricultural and Extension Education in Developing and Delivering Programs Promoting the Use of Draft Animal Power

James W. Hynes, Sam Houston State University

James R. Lindner, Texas A&M University

The purpose of this study was to delineate contextual applications in agricultural education used for acquiring the knowledge and skills necessary for the operation of contemporary businesses supporting or supported by the use of draft animal power. The researcher sought to determine if the reacquisition of knowledge and skills was driven in whole or in part by historical, cultural, or geographical factors. Another objective was to determine whether the methods used by the study participants in their reacquisition of the knowledge and skills necessary for success could be used as a role model for how other rural industries can start and flourish. The study found that those who have chosen to learn relic technologies and apply the solutions they give have been rewarded with satisfying work environments and communities. The skills learned are grounded in the past and have been improved by present technologies. The skill learning and training techniques were the same regardless of the location of the participants. The resources for this revival of an industry were not generated through the wisdom, leadership, or instruction provided by institutions of higher learning or their Cooperative Extension services.

Ten Recommendations for a Positive International Extension Experience

Daney G. Jackson, Associate Dean, Penn State Extension

John Boateng, The Pennsylvania State University

This paper presents ten recommendations for extension professionals who are working with international programs. It is intended to encourage extension educators to assess as many aspects of international work as possible as they develop opportunities. The importance of working in the international arena is crucial for the development of local industries which compete in a global economy and to our country which desperately needs to develop positive relationships with citizens of other countries.

The Predictor Parameters of Farmers' "Attributional Style"

Arman Bakhshi Jahromi, Kerman Agricultural and Natural Resources Research Center, Iran
Gholam Hossein Zamani, Islamic Republic of Iran

One of the applied subjects of motivation is explanations and excuses about success and failure. An explanation of motivation that focuses on how people explain the causes of their own successes and failure is called attribution theory. According to the theory, Individuals attribute the results of action, generally to four main causes: ability, effort, task difficulty, and luck. These causes can be grouped into three main dimensions: internality (or externality), stability, and controllability. The research has aimed to investigate the relationship between farmers' attributional style and their characteristics. Survey research methodology was used in this study. The population included irrigated wheat growers in Shiraz, Iran. With using two stage stratified random sampling method, 217 farmers (wheat growers) were sampled and interviewed. According to findings, there are relationships between attributions to effort with seven of eight farmers' characteristics: Educational level, age, exposing with information sources, cosmopolitanism, achievement motivation, interest in agriculture and attitude toward extension agent. Findings show that educational level, exposing with information sources, cosmopolitanism, achievement motivation, interest in agriculture and attitude toward extension agent have a significant relation with attribution to ability and task difficulty. Also, attribution to luck has negative and significant relationship with educational level, exposing with information sources, cosmopolitanism, achievement motivation and interest in agriculture. Considering the results of regression models, it will be obviously concluded that relationship between achievement motivation with attributional causes and attribution dimensions are stronger than the other relationships. Based on the results of research, relative recommendations are presented.

Application of Attribution Theory in Agricultural Extension and Education, a New Applied Viewpoint: Case of Iran

Arman Bakhshi Jahromi, Kerman Agricultural and Natural Resources Research Center, Iran
Gholam Hossein Zamani, Islamic Republic of Iran

Do you wonder why some farmers try hard? Why some farmers work hopefully while others are hopeless? And etc.? In attribution theory, individual's explanations and excuses about success and failure are discussed. People want to ascribe the cause of their successes and failures to something or someone. Attribution theory explains that, individuals attribute the results of action, generally to four main causes: ability, effort, task difficulty, and luck. These causes can be grouped into three main dimensions: internality (or externality), stability, and controllability. This research, has aimed to examine and study the attribution theory for successful and unsuccessful wheat growers and to specify that to what they attribute their successes or failures Survey research methodology was used in this study. The population included irrigated wheat growers in Shiraz, Iran. With using two stage stratified random sampling method, 217 farmers (wheat growers) were sampled and interviewed. The findings show that wheat yield performance has a positive significant relationship with attribution to effort and to ability. But it has a negative significant correlation with attribution to task difficulty and to luck. Also according to the findings, attribution to internal factors and attribution to controllable factors have strong and significant relationship with wheat yield performance of farmers. Paying more attention to developing motivational and psychological attitude of farmers, and increasing their technical information are some suggestions of the study. It should be considered that no research was found about farmer's attributional style in the review of literature.

The Supporting Role of the Agricultural Extension Organization (AEO) as Perceived by Farmers in Esfahan, Iran

Mostafa Karbasioun, Martin Mulder, and Harm Biemans, Wageningen University, The Netherlands

This study was designed to investigate farmers' perceptions of the kinds of support that the agricultural extension organization (AEO) in Iran has provided so far and of the kinds of support that should be

provided by AEO in the future. 102 farmers, who had already attended AEO extension courses, were selected from 17 townships in the province of Esfahan. The farmers completed a questionnaire during a personal interview. In general, the farmers could be characterized as lowly educated, male, married, elder than 40 years of age, smallholders and personal owners. They mainly produced crops and animal products. The two information sources that farmers used most to get informed about AEO programs were governmental extension agents and their own experiences. The farmers claimed that AEO has already supported them to some extent in the past. They mentioned that AEO has focused on animal husbandry and veterinary, agricultural inputs and enhancement of the fertility and size of the farms. For the future, they expressed that they will need much more support from AEO. According to the farmers, the most important kinds of future support are related to making an agricultural career more satisfactory for them and to reducing the risk, labor and severity of farming. The farmers were especially positive about the short-term extension courses offered in different disciplines over the last ten years and they regarded these programs as useful.

Usefulness of Agricultural Extension Courses and the Competencies of Instructors of the Courses as Perceived by Farmers, Esfahan, Iran

Mostafa Karbasioun, Martin Mulder, and Harm Biemans, Wageningen University, The Netherlands

The research presented herewith is aimed at supplementing a larger research project to design a competency profile for agricultural extension instructors (AEIs). The subject group chosen consisted of a select group of farmers from 17 different townships in the province of Esfahan, Iran who had attended short-term extension courses in 2004. It was focused on Iranian farmers that primarily comprise a more or less homogenous group of males over the age of 40, married, low educated, smallholders and owners of their farms. The study presents to AEIs the evaluations of their target group, farmers and contributes to the wider debate about the best methods for farmers to receive adequate and practical training. The factors motivating these farmers to attend extension courses were knowledge and skills inquiry, personal interest and socializing with other farmers and extension personnel. It was found that this group was generally positive about extension courses and AEIs who they met in the courses; nevertheless, the survey revealed certain improvements for future courses including the desired competence profile of an AEI. They suggested extension courses to be re-designed in terms of duration, evaluation methods and accessibility to instructional technology during the courses. Additionally, they found that an AEI can enhance his/her competencies in some specific domains such as stimulation skills, implementing proper examination methods, following up skills and using appropriate instructional technology. Respondents believe that a competent AEI should be well-informed, experienced, possess the ability to apply teaching methods and be familiar with farmers' culture, language and problems.

Role of Fisherwomen in Coastal Eco-System of Andhra Pradesh, Karnataka, Kerala, and Tamilnadu - An Overview

Vijaya Khader, Acharya N. G. Ranga Agricultural University, India
R. Sathiadhas, Central Marine Fisheries Research Institute, India

The contributions of the fisherwomen penetrate every aspect of post-harvest handling, preservation, processing and marketing of seafood products and provide an integral link between producers and consumers. Increased competition, declining resources and difficult working conditions make challenging work. Women, who constitute approximately half of India's population, play vital role in the operation of the fisheries and their continuing growth as a component of the agriculture sector of the economy. The assessment of the socio economic status indicated that very few households (15.41%) maintained livestock for income generation. About 60% of the fisherwomen carried out post-harvest activities to earn income. Food expenditure comprised 60.68% of the earned income contributing to the major share of the spending. Debt servicing was serious problem faced by 44.9% of the respondents who had availed loans mostly from non-institutional sources. Much of India's national food security rests on the shoulders of its fisherwomen. Affording comprehensive care for these women is correct in principle and a practical necessity if India's fisheries sector is to be satisfactorily sustained and the fisher women empowered, both

socially and economically. This can only be done through education about nutrition, health, sanitation, and child care, and training on current technologies and best practices techniques. Education materials viz., CDs, Flash Cards, Pamphlets, Brochures and Folders on health and hygiene, disaster management and income generation activities developed to create awareness. Two equipments, namely low cost ice cream freezer and multipurpose fresh fish vending and display table fabricated, received patents and licensed the technology to a woman entrepreneur.

An Investigation of Effective Factors Involved in Socio-Cultural Roles of Rural Women Farmers: A Case Study in the Western-Azarbaijan Province, Iran

Behrooz Khezerloo, Islamic Azad University (IAU) of Urmia, Western-Azarbaijan, Iran
Mohammad Chizari, Tarbiat Modarres University

The main purpose of this study was to determine the socio-cultural roles of rural women farmers and their influence of effective factors on their socio-cultural roles in Western-Azarbaijan Province, Iran. Rural women farmers have been selected using stratified randomization method ($n = 293$). The result of this study showed that there are a significant difference among variables of education level of rural women farmers, their ethnic groups, education level of their household head, cultural and educational facilities of village and their socio-cultural roles. The results obtained from the factor analysis reveal that the four following factors, social, environmental, educational and cultural characteristics explain 61.76% of the variation of the socio-cultural roles of rural women farmers.

Factors Predicting Korean Vocational High Schoolteachers' Attitudes toward School Change

Yung-Chul Kim, Ministry of Commerce, Industry & Energy in Korea, Republic of Korea
Larry E. Miller, The Ohio State University

The purpose of this study was to explain the relationship between the teachers' attitudes toward school change and their principals' perceived CFS (Change Facilitator Styles). The population studied consisted of Korean full-time vocational high school teachers ($N = 2,188$) employed by the Daejeon and Chungnam Offices of Education during the 2003-2004 academic year. Two hundred and twenty-seven teachers were randomly selected from the 40 schools. Data were collected through a mailed questionnaire. The usable response rate was 99%. Overall, the teachers had positive attitudes toward school change in general, but they showed a relatively low level of willingness to take action in pursuing school change. Strikingly, of the 40 principals, not a single principal was perceived by teachers to be an Initiator. The majority of principals (29.73%) were determined as Responders, and the remainder (11.28%) were Managers. This study failed to reveal that principals' CFS was a meaningful factor for predicting teachers' attitudes toward school changes. Two points might plausibly contribute to these findings. An average of 2.5 years as a principal, with an average of two years in their current public vocational high school, might not have been long enough to effectively foster school change in cooperation with their teachers. Teachers with union membership tended to rate their principals as Responders while teachers without membership tended to rate their principals as Managers.

A Process of Determining Needs Associated with Establishing an Agriculture Curriculum at Messiah Theological Institute in Mbale, Uganda

Thomas Korir Kipkurgat, David E. Lawver, and Matt Baker, Texas Tech University
John Kessell, Western Kentucky University
Susie Bullock, Lubbock Christian University

This paper presents needs assessment concerning the development of an agricultural science curriculum at Messiah Theological Institute in Uganda was performed. The long-term objective of this project was to analyze strategies and to establish courses that will improve perception of agriculture programs among schools and communities in Uganda. Agriculture is evolving considerably due to advent of technology. As a result of climate variability and other land use demands, there has been considerable concern

compounded with poor methods of farming in Uganda. Understanding the needs and development of agriscience programs is a big challenge confronting agricultural production in Uganda. This paper reports major concerns and possible solutions of improving agricultural programs through effective establishment of agricultural science curriculum.

Front-Line Disaster Responders: Florida Extension Professional's Personal Needs, Professional Needs, and Communication Efforts

Mark J. Kistler, Nick T. Place, Tracy A. Irani, and Ricky W. Telg, University of Florida

Florida was hit by four major hurricanes in a six week period in 2004, impacting almost the entire state. One hundred-seventeen people died as a result of these hurricanes, and damage estimates reached more than \$22 billion (Florida Office of Insurance Regulation, 2005). In agriculture and allied industries, estimates of damages totaled more than \$2 billion (UF/IFAS, 2005) affecting key commodities. One organization that has a statewide mission, the Florida Cooperative Extension Service, also was impacted severely. With offices in all 67 counties, the Cooperative Extension Service's county Extension agents were front-line responders during these four disasters. They supported the hurricane preparation and recovery efforts in their communities, came to neighboring counties' aid when they were raked by the hurricane while suffering both personal and professional hardships, communicated through various means to provide important information to clientele groups through mass and personal channels.

The Attitudes of Extension Faculty in Virginia towards Globalizing Extension Programs

Edwin C. Lewis and Jerry Gibson, Virginia Tech

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

An Investigation on the Perception of the Apple Orchardists about the Role of Extension Education Activities in Prevention of Postharvest Losses in Damavand Township, Iran

Shadi Kafaie Lotfi, Mohammad Chizari, and Gholamreza Pezeshki-Raad, Tarbiat Modarres University, Iran

This study utilized a descriptive-correlational surveying approach to examine the role of extension education activities in Prevention of apple Postharvest Losses in Damavand Township, Iran. The population of the study included all apple orchardists in Damavand. Orchardists were selected through stratified random sampling technique. Questionnaire reliability was estimated by calculating Cronbach alpha at 0.85. Apple orchardists who participated in the study was predominately male and was on average 50 years of age, majority of them had diploma degree and had on average 32 years of farming experience. The average of the land size in this township estimated about 21 hectare. Instructing appropriate method of harvesting is the most effective factor regarding prevention from apple postharvest losses. There is a significant relationship between age, land size, education and perception about extension education activities.

**An Investigation on the Perception of the Agricultural Extension and Education Staff
about Team Effectiveness in Tehran City, Iran**

Shadi Kafaie Lotfi and Mohammad Chizari, Tarbiat Modarres University, Iran

This study has examined the perception of agricultural extension and education staff about team approach. People who participated in this study were agricultural extension and education staff in Tehran, city, Iran in year 2004. Respondents were selected through random sampling technique. The results of the study indicated that respondents approximately male and were on average 37 years of age. Majority of them had bachelor's degree and had on average 12 years of working experience. Respondents are strongly agreed with identifying objectives clearly and appropriate leadership is the most important factors, which influence team-working effectiveness. Factors such as setting values, clarifying objectives, provide a model; identifying member's strengths make an effective team leader. There is not any significant relationship between genders; working experience and perception toward factors make a team effective.

**Learning about Smallholder Farmers in the Southeastern US: The Application of Sondeo
Methodology**

Tirhani Manganyi, Marta Hartmann, and Peter Hildebrand, University of Florida
Michael McGuire, Heifer International, Florida
Sandra Russo, International Center, University of Florida

The Gender, Environment, Agriculture and Participation (GEAP) Program at the University of Florida (UF) collaborated with Heifer International (HI) to conduct a study in rural communities in the southeast of the US. This study examined issues of socio-cultural as well as socio-economic nature among smallholder farmers served by HI in Georgia, Florida, Alabama and Tennessee. The researchers utilized a flexible and interactive research methodology, Sondeo. This methodology enabled the research team to disentangle complex social issues within the communities served by HI. This study demonstrates the strength of the Sondeo methodology in providing insightful, complex, and richly textured information about rural communities that is inaccessible through conventional research methods.

They all learn the same...Don't they?

An Evaluation of the Learning Style Preferences of the NZ Dairy Industry

Mandi McLeod, Silvanus Consulting Ltd, New Zealand

The New Zealand Dairy industry is committed to developing the knowledge and skills of its farmers by investing time, energy and money into training activities. What is uncertain is how effective this training is in terms of learning. It has been proposed that effectiveness of training is largely determined by the learning styles of the participants relative to that of the trainer. The term "learning styles" refers to an individual's characteristics and preferred way of gathering, organising and thinking about information. An individual's learning style is expressed as either a single preference or, most commonly, multi-modal. In the study reported here, questionnaires to determine their learning styles were delivered to every dairy farmer supplying Fonterra ($n = 8000$). From these data reasonable assumptions can be made as to the most appropriate and effective extension and training materials to promote learning. Results showed definite single mode preferences for read/write (24%) and kinesthetic (18%) and a lower percentage of multimodal preferences compared with the reference database. Dairy farmers over 35 years of age showed a definite preference for single mode read/write compared to those younger who were predominantly single mode kinesthetic. There was also a difference between the learning style preferences between sexes, women displaying a single mode preference for read/write and men almost even preferences for read/write and kinesthetic modes. Of significance are the low scores for aural and visual learning styles as single preferences.

Study on Attitude and Perceptions of Agricultural Undergraduate Students of Bu Ali Sina University toward Agriscience

Reza Movahedi, Bu Ali Sina University, Iran
 Mohammad Chizari, Tarbiat Modarres University, Iran

This study is an attempt to provide planners of agricultural higher education in Iran with an assessment to show the attitude of agricultural undergraduate students toward agriscience. It is, thus, an applied research using survey and correlation methodologies. The statistical population consists of undergraduate students of agricultural fields in Bu Ali Sina University between 2001-2005 years. 120 sample population of relevant students was selected randomly, out of total 800 statistical population. Literature review has been employed for data gathering, with questionnaire as research tool. Descriptive results of this study showed that 74% of respondents were female and 26% male. Only 8% of students were living in village. Before admission in the agriscience, extent of students' interest was moderate, in case it is increased after entrance to the agricultural faculty. Results of this research revealed that about 90% of target undergraduate students have agreed to agriscience by positive attitude (18% = moderate agreed, 67% = entirely agreed). On the other hand, only 15% disagreed to agriscience by negative attitude.

Use of Elearning Technologies by the Consultative Group on International Agricultural Research (CGIAR) Centers

Theresa Pehl Murphrey and Kelly Jett Murphrey, Texas A&M University

The Consultative Group on International Agricultural Research (CGIAR) is "a strategic alliance of countries, international and regional organizations, and private foundations supporting 15 international agricultural Centers" (CGIAR, n.d.) in 14 countries (12 developing, 2 developed nations). The mission of the CGIAR is "to achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy, and environment" (CGIAR, n.d.). Training and human resource development are important components that are used to achieve this mission. Advances in technology are providing new and innovative ways to provide training and human resource development. The purpose of this study is to assess the use of elearning across CGIAR Centers and provide recommendations for increasing and improving the use of elearning in developing nations. An exploratory mixed-method (qualitative and quantitative) methodology was utilized. Five of the 15 Centers (33.3%) responded by completing the online survey. All Centers were evaluated based on elearning evidence displayed within their organizational web sites. Preliminary findings reveal that CGIAR is utilizing elearning technologies at different levels across Centers. As a group, respondents reported high-speed Internet access at their Centers with employees on staff that could assist with elearning initiatives. All five responding agencies recognize opportunities and benefits associated with elearning technologies, while maintaining an awareness of challenges and barriers. The information gained regarding technology infrastructure and how elearning is used by CGIAR research Centers allows others to better plan, implement, and use elearning in their programs.

Education Needs of Extension Officers in Limpopo Province, South Africa

Thomas B. Murphy and Thomas H. Bruening, The Pennsylvania State University

The progression from subsistence to commercialized farming in South Africa has been a slow process since the political shift from apartheid. With the end of white-only rule in 1994, there have been a variety of programs attempting to move the agricultural systems in the country to a level where greater numbers of blacks are involved in production agriculture. With a vital role to play, agricultural Extension has developed an important position in the need to facilitate new landholding and use arrangements, foster commercialization, and discover new market opportunities for this emerging class of growers. This issue is even more pressing as globalization of the marketplace creates risk for those that fail to participate as early as possible. A needs assessment was initiated and developed with the Department of Agriculture in Limpopo Province, to determine the capacities of field-based Extension Officers within the districts of the Province. Results showed a great lack of the basic elements of a traditional Extension program as defined

by western standards. Many units operate without simple office equipment, computers, reliable transportation, and in some cases, electric and phone utilities. Extension Officers also indicated many shortfalls in training, clear work objectives, and difficulties associated working with a largely illiterate rural population. More in-depth training in financial management skills, marketing theory, computer technologies, and communication expertise were cited continuously by participants. For Extension to make an impact in the agricultural development of Limpopo Province, major financial and human capital investments will be needed in the near-term.

Priorities for the Undergraduate Agricultural Curriculum, Internationalization, and the Comparison Dilemma

Maria Navarro, University of Georgia

In a long-term effort to adapt to major social, cultural, technological, and globalization forces, higher education scholars have ongoing discussions of the purpose, structure, and content of higher education in agriculture in the United States. Change in the undergraduate agricultural curriculum is imperative. The question is, however, who will champion the change, who will implement it, and whether faculties are prepared and willing to be part of the process. The purpose of this study was to analyze what the faculty of selected land-grant colleges of agriculture perceives to be the priorities for the undergraduate agricultural curriculum; and what these faculties perceive to be the degree of relevance of the internationalization of the undergraduate agricultural curriculum. To gather data, the researcher asked a census of undergraduate teaching faculty in colleges of agriculture of two land-grant universities to respond to an on-line questionnaire with both quantitative and open-ended questions, and also conducted eight one-hour interviews. The study found that faculty gave preference to enhancing student development of analytical and communication skills over enhancing technical contents of the curriculum. Increasing international awareness ranked last on faculty priority lists. On the other hand, faculty also indicated that internationalization of the curriculum was very relevant. The tendency to compare and contrast issues often waters down the emphasis given to internationalization, especially if it is viewed as a mutually-exclusive alternative to other efforts. This tendency to compare is referred to in this paper as the “comparison dilemma.”

Effective Factors Involved in Adoption of Sprinkler Irrigation: A Case Study in Wheat Farmers in Nahavand Township, Iran

Omid Noruzi and Mohammad Chizari, Tarbiat Modarres University, Iran

The purpose of this study was to examine effective factors involved in adoption of sprinkler irrigation about wheat farmers in Nahavand Township from Iran. Wheat farmers ($n = 15365$) in the Nahavand Township from Iran were the target population for this study. The population frame was obtained from Nahavand agricultural organization. The sample obtained through proportional stratified sampling ($n = 375$). The methodological approach of this study is twofold: descriptive-correlative and causal-comparative. The Ministry of Agriculture’s Extension Organization Directory was used to locate the wheat farmers. Content and face validity were established by a panel of experts consisting of faculty members in irrigation, agronomy and extension and education at the Tarbiat Modarres University. Further, the questionnaire was validity by agricultural officers of Nahavand Township. A pilot test was conducted with 30 wheat farmers. A reliability analysis, conducted and alpha value were reported 84%. The results of the study showed that, among the individual characteristics, there is a significant difference between adoption of sprinkler irrigation with age, literacy, experience cultivating wheat and rate of farmland. Also the results indicate that among the social factors, there is a significant difference between rate of social participation, rate of communication canals and rate of extension contacts with adoption of sprinkler irrigation.

The Perception of Rural Youths Regarding Teamwork in Youth Club

Ahmad Reza Ommani, Islamic Azad University-Shooshtar, Iran

Mohammad Chizari, Tarbiat Modarres University, Iran

The main objective of this article is to present the results of a study done about perceptions of rural youths in the Shooshtar township of Khuzestan province in Iran regarding teamwork in youth club. The research design was a correlative--descriptive method. Rural youths of Shooshtar Township were the target population for this study. A random Sample of rural youths selected ($n = 356$). Appropriate statistical procedures for description (frequencies, percent, means, and standard deviations and spearman coefficient of correlation) were used. The main result of the study revealed that overall rural youths tended to agree or were unsure about teamwork in youth club and there exist correlation between the level of education, social participation, awareness with respect to teamwork approach and participatory skills with perception of rural youths regarding teamwork in youth club. Liner regression for predict changes in perception of rural youths regarding teamwork in youth club regarding level of education, Social participation, Participation in organizations, Awareness with respect to teamwork approach and Participatory skills may well explain for 68% changes ($R^2 = 0/680$) in perception of rural youths regarding teamwork in youth club.

Use of Information Technology by Extension Agents in Khuzestan Province of Iran

Ahmad Reza Ommani, Islamic Azad University-Shoushtar Branch, Iran

Mohammad Chizari, Tarbiat Modarres University, Iran

The main objective of this article is to present the results of a study done regarding the use of information technology by extension agents in Khuzestan Province of Iran. The research design was a correlative—descriptive method. A random sample of ($n = 96$) extension agents who worked for Management of Extension and Farming System of Khuzestan province, Iran were selected for participation in the study. A questionnaire was developed to analyze level of information technology that used by extension agents. Face and content validity of the questionnaire was established using a panel of experts consisting of faculty in the department of agriculture at Shushtar University and extension officers in the Ministry of Agriculture. Reliability for the overall instrument was 0.78. The main result of the study revealed that approximately 17% responded their skills about IT to be “very poor” and approximately 68% responded their skills to be “poor”. Approximately 89% responded that they use their computer, both at home and at work, between “0-5 hours a week”. The results also showed that top five IT training needs for extension agents were: E-mail, Presentation software, Word processing, SPSS, WWW. In this study, there was a significant relationship between the age, IT knowledge, position, income, social participation, attitude regard using IT and level of education with use of information technology by extension agents. Level of education, social participation, income, IT knowledge, position and attitude regarding using IT may well explain for 78% changes ($R^2 = .78$) in use of information technology by extension agents.

Emotions on the Ground: The Role of Emotional and Symbolic Components in an Adult Education Program for Women Farmers in Egypt: Implications for International Teamwork in Agricultural and Extension Education

Mona Othman and B. Lynn Jones, Iowa State University

The emotional component of women learners toward the land and environment has strongly fostered their learning about sustainable agriculture in this particular extension program. Women have epitomized what Vygotsky (1926; 1997) pointed to as: “functions of imagination and emotion” in education. The overarching purpose of the study was to explore the methods and techniques women utilized in learning and teaching agriculture in the agricultural extension setting and to describe exactly what happened in this experimental educational program. The paper represents one of the major findings of a larger study. The ethnographer’s focus was to illuminate how gender and emotional components in education played a significant role in this interactive educational process. In this descriptive study, data were gathered through semi-structured interviews, participant observation of learners and teachers, photographs and

video tape, and documents and publication analysis. The study may, therefore, be transferable to other rural regions, with special attention to the varied cultural and social context around women. The findings should be applicable to women farmers in rural regions that share the same norms and values with women farmers in rural Egypt. In international and cross-cultural collaboration, it is necessary to understand the right emotions and symbols that make sense to the targeted group and are most utilized where the collaboration project will take place, especially if the targeted group happens to be women. One common factor among agricultural programs world over is that they already embrace emotion toward sustainability of land, resources, and more importantly people by fostering the means of a better livelihood.

From Distance Learning to Blended Learning: The Development of E-Learning Approaches and Methodologies to Address the Educational Needs Have Dispersed Rural Groups and Their Educators: A Case Study of V-Learn.IE - The Virtual Centre of Academic Excellence in Rural Development

James Phelan and Lily Mulhall, University College Dublin, Ireland

Technology has revolutionised the way people live and learn. It is also beginning to impact on university education. There are now no valid reasons why a significant amount of education cannot be delivered using modern technologies. The advantages are numerous, the availability of cohesive learning materials, flexibility of learning, the removal of distance as a major entry barrier and time saving, once courses are developed are all major attractions. Four major universities in Ireland have worked together over the last ten years in developing a blended learning system for rural development activists. Over 300 adult learners have availed of this system of learning and their performance is on par and in many cases better than that achieved with traditional learning systems. Key components of this system include specifically developed interactive text materials, Powerpoint slides with voice over, MP3 voice CDs and a well developed tutoring system. V-learn.ie is innovative in structure, in its blended learning model and in the extent of expertise that it can present to rural people.

Mentoring: Providing Greatest Benefit to New and Seasoned Faculty in an Extension Organization

Nick T. Place and Ashley Bailey, University of Florida

This descriptive study stems from a pilot mentoring program that served as a small-scale replica of a statewide program. The objectives of the study were to determine benefits and value to protégés, mentors and the Extension organization. Three phases of data collection were utilized. Phase one and two were formative evaluations collected via questionnaires, consisting of open-ended and Likert-scale questions. The third phase was a summative evaluation that utilized four focus groups consisting of one group of each of the following extension positions: District Extension Directors, County Extension Directors, Mentors and Protégés. Data analysis for the Likert-scale questions consisted of a basis statistical test. Qualitative findings were analyzed using content analysis to recognize major and minor themes and were then used to make judgments on the findings and subsequent recommendations. Benefits and value were perceived to be gained by both the mentors and protégés in the program. For example, protégés benefited from the vision and support of being paired with a seasoned agent. The mentors gained personal satisfaction from helping a new agent and they felt rejuvenated by working with a younger enthusiastic protégé that gave the mentor a new fresh look at their job. The participants also provided insight in regards to recommendations, guidelines and procedures towards what would make an effective mentoring program.

The Benefit of Baskets: The Economic, Ecological, and Cultural Impacts of Fair Trade of the Indigenous Ye'kwana in the Rio Caura Region, Venezuela

Carlton Pomeroy, University of Florida
Matt Baker, Texas Tech University

The linkages between international trade, the environment, cultural exploitation, and poverty have come under increased scrutiny in the last decade. This is, at least in part, attributable to the perception that the current process of globalization is occurring at a rate unprecedented in human history, and with a lack of attention to consequences for the rural poor and the environment. Trade scholars have been concerned with the impacts of open trade in terms of natural resources (i.e. overexploitation), economic benefit (are local producers receiving fair prices), as well as the cultural impacts (cultural erosion) in developing nations. In response to these concerns the Fair Trade movement has been active for over 40 years. The primary goal of fair trade has been about providing market opportunities and developing the Northern market for products from poor producers in developing countries. This case study examines the impact of Fair Trade on a women's cooperative in the Ye'Kwana indigenous community of Boca de Ninchare located in the Caura River basin of Venezuela. Earthbound, a non-government organization, has conducted a series of workshops with the Ye'Kwana on marketing options to generate income from the sale of baskets, basic business skills training, and participatory research for management of forest products used in the basket weaving enterprise. The project uses fair trade to ensure that the commercialization of the baskets is sustainable from a cultural, business, and natural resource perspective.

Teaching an Extension Program Development Course in an International Setting: Challenges and Opportunities

Rama B. Radhakrishna, The Pennsylvania State University

Internationalizing the curriculum coupled with encouraging students to participate in Study Abroad Programs has been recognized as key components for preparing global-ready graduates. In the last decade a number of higher education institutions in the United States have embraced internationalization as a key factor for infusing international concepts into the curriculum. This study provides a glimpse of a teaching assignment that this author completed in Russia that involved teaching of Extension Program Development course to Russian and American students. The course was designed to provide an understanding of the U.S. land-grant system with a special emphasis on Cooperative Extension System. There were 16 students, nine from Russia and seven from the U.S. A total of 16 students, nine Russian and 7 American enrolled in the class. Before departing to Russia, the instructor had developed the syllabus, a course packet, exams, and assignments. In addition, session outlines were translated into Russian language. In spite of the advanced preparation, the instructor had to make several changes (incorporating more group discussion, use of case studies reflecting Russia and the U.S., and exam format) to facilitate student learning. Language was a major challenge. However, the translation of session outlines was helpful especially for Russian students. Format of exam was also changed to "oral" reflecting Russian system of testing. Instructor experiences, changes made to facilitate student learning, and strategies to infuse international concepts are discussed in this paper.

Agricultural Information Management Behavior of Indian Farmers

Dandu Jagannadha Raju, Acharya N.G. Ranga Agricultural University, India

Information is viewed as a resource like land, labour and capital. The information explosion in modern technologies has created a unique situation, making the recipients unable to understand and cope with the vast amount of information. There is a gap between those who use ideas and those who produce them. A good technique of information management will certainly reduce this gap. An ex-post-facto research design was followed for the study conducted in the purposively selected Southern Telangana agro-climatic zone of Andhra Pradesh. A total of 60, 12 farmers from each of the five selected villages of the five districts were taken as sample. The Agricultural Information Management was operationalized as the process of identifying and collection of information on agricultural technologies of origin, storing,

updating and retrieving it whenever necessary to process manipulate and disseminate the processed information to various users at the time they can most efficiently use it. Suitable measurements were determined to quantify the independent and dependent variables selected for the study. The responses were obtained by administering the pre-tested interview schedule. Majority of the respondents belonged to medium (68.34%) category of information management behavior followed by low (16.66%) and high (15.00%) categories. It was observed that identifying the 'needed information' phase was performed better by the farmers followed by dissemination, utilization, consequences, processing, getting information and feedback. Education, farmer-extensionists interaction, economic motivation and innovativeness were found positively and significantly correlated.

Assessment of Team Performance as Perceived by Tribal Farmers in Cashew Orchard Development Program in India

Illuri Sreenivasa Rao and Dokka Venkata Swamy, ANGR Agricultural University, India

Team Performance is the key factor for success or failure of any organization. Effective Team performance leads to maximum goal or target achievement. Shifting cultivation in sloppy hills is the major activity of tribal farmers in the tribal zone of Andhra Pradesh, India for food security, but this activity leads to lot of environmental problems in the tribal zone. The income to the tribal farmers from the shifting cultivation is also low and not sufficient to maintain their families throughout the year. Hence the initiation of Cashew Orchard Development Program to curb the shifting cultivation and increase the income levels of tribal farmers. This study assessed the team performance in Cashew Orchard Development Program as perceived by the tribal farmers in Vizianagaram district of Andhra Pradesh, India and the relationship of profile characteristics of tribal farmers with team performance. A random sample of 250 tribal farmers in the Vizianagaram district of Andhra Pradesh, India responded to a two – section survey instrument. Data was collected by personal interview method. Findings indicated that the tribal farmers perceived the team performance as good and further analysis of overall mean it was found that the role delivery by Farm Science Centre got highest. The profile characteristics like education, social participation, extension contact, mass media exposure, risk orientation and economic motivation had positive relationship with team performance.

Participatory Irrigation Management in the Apwell Project: Indo-Dutch Teamwork

R. Ratnakar, ANGR Agricultural University, India

S. Govardhan Das, Former Consultant Hydro Geologist, APWELL, India

The Andhra Pradesh Ground Water Borewell Irrigation Schemes (APWELL) project started in April 1995, with financial assistance from the Netherlands Government. Execution is by the Andhra Pradesh State Irrigation Development Corporation (APSIDC) of the Ministry of Irrigation. Technical assistance is provided by a consortium led by ARCADIS-Euroconsult (Netherlands). The project is being implemented in 7 drought prone districts of Andhra Pradesh and a total of 4476 wells have been drilled, of which 3460 are successful (above >1500 GPH), and have been commissioned. The project assists small and marginal farmers, organized into Water User Groups (WUGs) and Borewell User Associations (BUAs), with the construction and operation of sustainable small-scale borewell schemes. Activities are implemented through APSIDC, in partnership with Non-Governmental Organization (NGOs) and various line departments at district level. The Participatory Irrigation Management component of the APWELL Project aims to achieve the following: Strengthening the village institutions, improving the extension network and enhancing the skills of water users in social cohesiveness, village institutional management, gender balance, increased agricultural productivity, adoption of proper water management practices, hydrological monitoring, improved cropping patterns, and environmentally sound interventions in resource conservation. The participatory irrigation management process in the APWELL project has shown that farmer participation in irrigation management is viable and relevant. Women farmers have been especially empowered to participate fully in irrigated agriculture. Significant impacts are evident in the field.

Strategy for Up-Scaling the “ATMA” Model in India

M. N. Reddy, National Institute of Agricultural Extension Management, India

Burton E. Swanson, University of Illinois at Urbana-Champaign

The ATMA model was conceived and pilot tested to promote decentralized decision-making, using an integrated developmental approach based on a participatory planning process, with farmers being central to setting the agenda for research and extension, and making the public extension systems both farmer-driven and farmer-accountable. In addition, the ATMA model was created to establish an extension system that was both decentralized and market-driven to increase farm income and rural employment. The Strategic Research and Extension Plan (SREP) at the district level and the State Extension Work Plan (SEWP) at the state level are the master documents that provide the broad guidelines for those responsible for implementing the plans. The plans reflect the needs of the farmers within the available resources. The major thrusts in the ATMA model are 1) to promote the public-private partnership, 2) to ensure the mainstreaming of women and disadvantaged groups, 3) to provide a single window to deliver services, 4) to concentrate all developmental efforts at the district and state levels, and 5) to maintain flexibility in operational procedures. The strategy to realize the intent of ATMA model is further tested and refined which has become the current approach.

Contracting for Agricultural Extension: Review and Analysis of Diverse Public/Private Contracting Arrangements Worldwide

William Rivera, University of Maryland, USA

Gary Alex, International Consultant

In many countries of the world, both developed and developing, agricultural extension services are shifting from the public to the private sector. In some cases, services are being contracted out in order to improve the financing and delivery of agricultural knowledge. This paper presents work developed by the former Agricultural Knowledge and Information Systems (AKIS) thematic group of the World Bank, in collaboration with the University of Maryland, to examine contracting services. A range of case studies from countries as diverse as Australia, Bangladesh, Chile, China, Germany, Mozambique and the USA are presented to demonstrate the range of approaches. Topics include: off-loading public sector extension delivery services, contracting to improve environmental services and farmers contracting for commercial advisory services. The original cases were published in book form under the title *Contracting for Agricultural Extension* (Rivera & Alex, 2002). The present text reviews, summarizes, and re-examines the contents of *Contracting for Agricultural Extension* (Rivera & Alex 2002). Following a brief introduction of the purpose, method, and results of the original study, we examine its educational application. While we find that contracting for extension is a positive development and a vital strategy for the advancement of knowledge transfer in the agricultural domain, we stress that it should not be considered, and cannot be, an answer to unresolved management problems or the incapacities within an institution. In short, despite its advantages and benefits, contracting is not a panacea.

Enabling Agriculture: The Evolution and Promise of Agricultural Knowledge Frameworks

William M. Rivera, University of Maryland, USA

Gary Alex, International Consultant

James Hanson, University of Maryland, USA

Regina Birner, Research Fellow, International Food Policy Research Institute

This paper reviews the evolution of different agricultural knowledge frameworks and assesses their different approaches to enabling agricultural development. We identify the strengths and weaknesses in early and current frameworks and discuss present trends in thinking about how best to promote innovation and rural development. The paper's practical purpose is to contribute to strengthening the foundation that donors and governments use for their planning and investments in developing effective knowledge systems to support rural development. The paper traces how four major international knowledge frameworks for enabling agriculture have evolved over time. Starting from investment in public institutes,

inefficiencies and lack of sustainability led to pluralistic approaches to promote private sector participation in technology sub-systems. This latter trend continued with more comprehensive investments in knowledge and information systems responsive to client demands and is now moving toward an approach based on comprehensive (technical, managerial, and institutional) innovation systems. In reviewing the value and limitations of each of the four frameworks, we stress the importance of undertaking situational assessment of individual countries before investing in the reform and development of agricultural knowledge systems. Thus, we add our voice to those who argue that development is country-specific and path-dependent.

Surveying on Wheat Farmers' Access and Confidence to Sources of Information and Communication Channels (ICTS) about Controlling *Eurygaster integriceps* in Hamedan Province of Iran

Heshmatollah Saadi, Bu Ali Sina University, Iran

Reza Movahedi and Uwe Jens Nagel, Humboldt University of Berlin, Germany

Today, Generation new and various information and knowledge sources need new information and communication channels. The better selection of information and communication channels (ICTs), the more effectiveness of extension programs in agriculture. Surveying on wheat farmers' access to sources of information and communication channels as ICTs about controlling *Eurygaster integriceps* Puton in Hamedan province of Iran is primary purpose in this research study. The research method used was descriptive-analytic survey (correlation, causative, and regression). The population consisted of a sample of wheat farmers ($N = 203$) on Hamedan province in Iran from 2004 through 2005. Descriptive results of this study showed that all of respondents were male ranged in age from 23 to 83 years. The most important educational need of wheat farmers was identifying new varieties of wheat's resistant to pest. Village extension centers, TV, neighbours/relatives/colleagues, extension agents and radio, were the five important communication channels basis on eligibility to access, respectively. The highest confidence of wheat farmers was toward agricultural research centers, village extension centers, local extension agents, newsletter and TV, respectively.

Factors Affecting Agricultural Extension Personnel's Motivation Level

Hassan Sadighi, Tarbiat Modarres University, Iran

The primary purpose of this study was to investigate factors influencing professional staffs' motivation. This was a national study using a descriptive-correlational design. A total of 478 extension professional staffs from these organizations were selected by a complete randomized sampling technique as a sample of the study. The study showed that more than 68% of the respondents' motivations are in low (or somewhat motivated) levels. This indicates that a substantial work needs to be done in order to improve the situation. Extension organization in Iran needs to develop strategies to optimize its human potential. The result showed that age of the respondents had a positive and statistically significant association with their motivation level. The result also showed that respondent's participation, experience, and management system (under which they work) have a 'low' association with their motivation. The respondents' professional satisfaction was highly correlated ($r = 0.61^{**}$) with their motivation level which is considered a 'substantial association'. A Multivariate Linear Regression indicated that among the independent variables, age, experience, participation, management system, and professional satisfaction accounted for 38% of the variance in the respondents' motivation level. This implied that there are other factors that may have contributed substantially to variations in motivation level that were not investigated in this study.

Institutional Factors and Their Relationship to Hispanic Participation in Texas Extension Programs

Ruben J. Saldaña, Texas A&M University Cooperative Extension
 David Lawver, Texas Tech University
 Scott Cummings, Texas A&M University
 Marvin Cepica, Texas Tech University
 James Lindner, Texas A&M University
 Hansel Burley, Texas Tech University

Predicated on the rapidly changing ethnic demographics in Texas and 69.3% parity levels for Hispanic participants in Extension programs, this causal-comparative study examined relationships between seven institutional variables and levels of Hispanic participation in Texas Extension programs. Parity was used as measure of participation and calculated as a 3-year mean percent of Hispanic participation from 2001-2003. Variables were collected through a web-based instrument using a Likert-type scale. A pilot test resulted in internal validity of .77 using Cronbach's alpha. The study determined the correlational relationships between seven independent institutional variables and the dependent variable, program parity. Confidence levels were set at .05 a priori and data were analyzed through descriptive statistics and bivariate correlations. A population of 332 county faculty from TCE (1862) and CEP (1890) were studied. It was found that no variables were positively correlated, five variables were negatively correlated, and two variables were not correlated to Hispanic participation. Four of the five negatively correlated variables had a low level of correlation and one had a moderate level. It was concluded that those variables with positive correlations had the potential to increase Hispanic participation while those with negative correlations could be detrimental to Hispanic participation.

A Needs Assessment of Aquaculture Extension Agents, Specialists, and Program Administrators in Extension Programming

Michael H. Schwarz and Jerry D. Gibson, Virginia Tech

The purpose of this study was to identify continuing education and training needs of aquaculture Extension agents, specialists, and program administrators on the list serve AQUA-EXT. Ten competency areas were evaluated regarding perceived importance, and need for continuing education or training. In addition, 14 resources on the Aquaculture Network Information Center (AquaNIC) Web site were evaluated from this population for frequency of use and recommended improvements. Data were collected with an online survey conducted via the interactive and encrypted Web site www.survey.vt.edu/. A majority of Extension agents, specialists, and program administrators did not require significant continuing education or training to accomplish their work effectively. However, general agreement among the three groups was for continuing education in the areas of program evaluation, information technologies, and human development. Regarding the AquaNIC Web site, 52% of Extension agents, 71% of specialists, and 81% of program administrators reported having used AquaNIC, however, use was infrequent. Recommendations to enhance Web site utility focused on requests to update and incorporate more comprehensive and in-depth information for all resource areas. Demographics indicated mean ages for Extension agents, specialists, and program administrators were 47.9, 50.5, and 51.5 years respectively. Sixty three percent of agents indicated having master's degrees, and 63% and 72% respectively of specialists and program administrators indicated having doctorates. Means for years in their present position were 13.4, 13.2, and 8.4 years respectively for Extension agents, specialists, and program administrators, and 16.6, 16.1, and 15.5 respectively regarding total years in Cooperative Extension or Sea Grant.

Developing Market-Driven Extension System in India

K. M. Singh, Rajendra Agricultural University and Project Director, India

Burton E. Swanson, University of Illinois

India's agricultural extension system is at a pivotal point in its development. During the past 50+ years, the Indian extension system has evolved to reflect national priorities. At the outset, extension worked to bring about broad-based rural development. However, the food crises starting in the late 1950s refocused the efforts of extension on food security and increasing food production. The combination of Green Revolution technology in the late 1960s and Training and Visit (T&V) Extension in the mid-1970s enabled India to achieve food self-sufficiency during the 1980s–1990s. At the same time, malnutrition and poverty continue to be persistent problems for the rural poor. As a result, the Government of India, with the assistance of the World Bank, designed and pilot-tested a new extension approach that would decentralize the extension system, refocus it on agricultural diversification, thereby making it more market-oriented. This paper describes the Agricultural Technology Management Agency or ATMA model that was successfully pilot-tested from 1998–2005 in an effort to increase farm income and rural employment. The first part of the paper describes how this decentralized extension system is organized; the second part describes the steps followed in creating a market-driven extension system. Finally, the paper summarizes the impact of this approach on the cropping systems, farm income and getting farmers organized in 28 pilot districts. Based on these results, the Government of India is expanding the coverage of the ATMA model and effectively transforming the extension system into one that is both decentralized and market-driven.

Attitude of Farmers towards Cultivation of Bambara Groundnut in North-east Botswana

Stephen Kayode Subair, University of Botswana, Botswana

A survey was conducted in July 2005 to determine the attitude of farmers in the North-East region of Botswana towards the cultivation of hybrid variety of Bambara groundnut in Botswana and also to determine the relationship between the attitude of the farmers and some socio-cultural variables. Proportionate stratified random sampling method was used to select 10 farmers in nine extension areas of the north-east region of Botswana. A total number of 90 farmers were thus selected to participate in the study. A questionnaire was developed by the researcher and used to collect data. Respondents were asked to indicate their responses on a six-point Likert type scale. The statements were validated and the reliability estimate calculated and found to be 0.81. The socio-cultural variables used in the study were considered relevant in the light of some theoretical considerations. Results showed that farmers have a favourable attitude towards the cultivation of hybrid variety of Bambara groundnut. In most cases negligible relationships were found between the attitude of the farmers and the socio-cultural variables examined.

Developing a Bridge between Extension Professionals and the Community: The Practical Application of Five PRA Tools

Anna Sutherland Toness, Associate Peace Corps Director, Belize

Participatory Rural Appraisal (PRA) methodology holds strong promise for supporting the changing role of agricultural extension and education. PRA is defined as a growing family of approaches and methods to enable local people to share, enhance, and analyze their knowledge of life and conditions, to plan, and to act. The purpose of this paper is to provide practitioners with application-oriented information on how five PRA tools were utilized to help communities take ownership through group analysis, planning, and action, with the added benefit of improving cooperative efforts between outsiders and insiders. Five PRA tools (Community and Social Maps, Farm Maps with Gender Analysis, Venn Diagrams, Matrices, and Action Plans) are described and analyzed, with emphasis on community aspects of their application and the type of information each tool generates. This paper is a partial report of results from 16 months of field research in Paraguay using PRA among six rural communities and four organizations.

Historical and Current Extension Systems in Dr. Arroyo, Northeastern Mexico

Sabrina Tuttle, Gila County Cooperative Extension, University of Arizona

James R. Lindner and Kim E. Dooley, Texas A&M University

Current extension systems in Mexico originate from a long history of changes in land reform, agricultural emphases, and extension administration. This research study examines the historical changes that led up to the present system, and then looks at a case study of one group of extension agents working in villages near the municipality of Dr. Arroyo, in northeastern Mexico. The beginnings of land reform and even extension stem from the Mexican Revolution of the early twentieth century, when lands were ceded to groups of small scale farmers over the period of over 50 years. Mexican extension came under federal control in 1971, and the Rural Credit Bank also provided extensionists for its loan programs during the 1980s. In the early 1990s, agricultural unions began to provide extension services to their clients, and by the late 1990s, extension had become quasi-independent of the federal government: the states provided extension services to people who could not afford to pay through contracts with state governments. The extension group of ten extension agents that this study examines was paid through this type of state contract to offer extension programs to the villages surrounding the town of Dr. Arroyo. These extensionists promoted intermediate level technology that was generally appropriate for their clientele, who were members of farmer groups called ejidos. These extensionists, however, thought that the government did not fully understand how the

Development Oriented Performance Appraisal System to Enhance Productivity of Extension Professionals

K. Vijayaragavan, Indian Agricultural Research Institute, India

Souvik Ghosh, WTCER (ICAR), Bhubaneswar

Performance appraisal is a process of evaluation of job achievements or outcomes of an employee for a fixed period of time with regard to agreed upon job goals in terms of quality and quantity. Even today, the performance appraisal in these organisations is nothing but a confidential rating of the employees by the superiors and used mainly for the purposes of control and decisions regarding promotions and transfers. The traditional appraisal system is management centered rather than employee centered. Can we use the performance appraisal as a tool to development employees' performance rather than a tool of control and finding faults? Yes, such a development approach to performance approach will be employee centered with the aim of helping the employees to improve the performance.

Training Needs of Extension Managers in Managerial Skills and Practices

K. Vijayaragavan, Premlata Singh, and Monika Wason, Indian Agricultural Research Institute, India

The need for improving the managerial skills of extension managers has also increased in recent years due to changing scenario in agriculture, economy and communication. Therefore, development of managerial skills should be the focus of extension organizations in the coming years. The first step in improving the managerial competencies of extension managers will be to assess their training needs. This paper describes the findings of the study undertaken in two states of India to assess the training needs of extension managers in managerial skills and practices. A total of one hundred extension managers selected from two states (Tamil Nadu and Rajasthan) through random sampling technique formed the sample of the study. The training needs of extension managers in management competency were assessed based on task analysis. In order to validate as well as supplement the findings of need assessment through task analysis, training need was also assessed based upon self-assessment using a five-point continuum scale. Findings of this study clearly indicate a need for in-service training in the following areas of management: planning, leadership, communication, team building, creativity management, problem solving & decision-making, information management, personal effectiveness, performance appraisal, information management & network techniques, stress management, time management, and evaluation of programs.

What Drives Cornish Dairy Farmers' Management Decisions?

Victoria Westbrooke, IGER North Wyke Research Station, United Kingdom

Denise Bewsell, AgResearch, New Zealand

Moving to a new area can involve a great deal of learning for an extension officer. It is important to develop an understanding of the factors affecting farmer decisions quickly so that extension support can be tailored to local farmer needs. Training, mentoring, colleagues' perceptions of farm business drivers and formal needs analysis are all potential ways of developing an understanding of the context of local farming. However, none of these methods per se offer the extension officer a robust, focused, cheap and reasonably quick way of building local knowledge. We used qualitative interviews with farmers coupled with a mentor group to provide regular feed back in the knowledge building process. The method worked well and revealed that the main drivers in decision making for Cornish dairy farmers were, time and focus, financial overheads, access to land, milk processors requirements and the farming families' involvement in the farm. Two key points were evident; first, that extension officers should be trained in using qualitative interviewing and in facilitation procedures to allow them to build an understanding of local farmers support needs, and second, to provide a quick, robust screening process for issues that warrant funding for a formal needs analysis and extension program.

Association for International Agricultural and Extension Education
22nd Annual Conference

Clearwater Beach, Florida
May 14-19, 2006

Outstanding Professional Paper Presentations

First Place Outstanding Paper Presentation

**Institutional Arrangements for Increasing the Dissemination Role of Farmer Groups in
Agricultural Innovation Systems**

Kristin Davis

International Food Policy Research Institute, Addis Ababa, Ethiopia

Second Place Outstanding Paper Presentation

**They all learn the same...Don't they? An Evaluation of the Learning Style Preferences of
the NZ Dairy Industry**

Mandi McLeod

Silvanus Consulting Ltd, New Zealand

Third Place Outstanding Paper Presentation

Attitude of Farmers towards Cultivation of Bambara Groundnut in North-East Botswana

Stephen Kayode Subair

University of Botswana

Outstanding Graduate Student Paper Presentation

How Do the Russian Citizens of Dmitrov Hills Conceptualize Genetically Modified Foods?

Curtis R. Friedel, Courtney A. Meyers, Nadezhda N. Mamontova, & Tracy A. Irani

University of Florida

Association for International Agricultural and Extension Education
22nd Annual Conference

Clearwater Beach, Florida
May 14-19, 2006

Outstanding Poster Presentations

Outstanding Graduate Student Poster Presentation

**Using Community Atlas Teams to Educate Youth on
Emerging Precision Farming Technologies**

*Amy Harder & James Lindner
Texas A&M University*

First Place Outstanding Poster Presentation

Needs Assessment of Extension Officers in the Limpopo Province of South Africa

*Thomas Murphy & Thomas Bruening
Penn State University*

Second Place Outstanding Poster Presentation

Force Field Analysis in Adoption of Water Saving Technology of Rice in India

*Sreenivasa Rao Illuri, Punna Parisa Rao, & Gidda Pesaladinne Reddy
Hyderabad, India*

Third Place Outstanding Poster Presentation

**Processes to Develop an Agricultural Science Curriculum at
Messiah Theological Institute at Mbale, Uganda**

*Thomas Kipkurgat, John Kessell, David Lawver, Matt Baker, & Susie Bullock
Texas Tech University*

Association for International Agricultural and Extension Education
22nd Annual Conference

Clearwater Beach, Florida
May 14-19, 2006

Outstanding Carousel Roundtable Presentations

First Place Outstanding Carousel Roundtable Presentation

**Engaging Students in International Development Efforts:
CARE-UGA Student Organization**
Maria Navarro, The University of Georgia

Second Place Outstanding Carousel Roundtable Presentation

**A Participatory Approach to Secondary Agricultural Education Program Improvement:
A SWOT Analysis of Secondary Agriculture Programs in Trinidad**
Adewale J. Alonge, Miami-Dade County Public Schools

Third Place Outstanding Carousel Roundtable Presentation (tie)

University of Florida IFAS Extension Hosts Fellow Iraqi Agriculture Educators
Pete Vergot III, Paula M. Davis, Ken Rudisill, & Logan Barbee, University of Florida

Rethinking the Use of Opinion Leaders in Different Cultures
Gustav H. Düvel, University of Pretoria, South Africa

Association for International Agricultural and Extension Education
22nd Annual Conference

Clearwater Beach, Florida
May 14-19, 2006

AIAEE Award Winners for 2005

Outstanding Service Award

Dr. Pete Vergot III, Associate Professor

University of Florida/IFAS Extension
155 Research Road
Quincy, FL 32351
E-mail: pvergot@ufl.edu

Outstanding Leadership Award

Dr. Don Breazeale, Associate Professor

University of Nevada Cooperative Extension
P.O. Box 239
Lovelock, NV 89419
E-mail: breazealed@unce.unr.edu

Outstanding Achievement Award

Dr. Nick T. Place, Associate Professor

University of Florida
Department of Agricultural Education and Communications
219 Rolfs Hall/PO Box 110540
Gainesville, FL 32611-0540
E-mail: nplace@ufl.edu

Outstanding Early Achievement Award

Dr. Maria Navarro, Assistant Professor

The University of Georgia
Department of Agricultural Leadership, Education, and Communications
105 Four Towers
Athens, GA 30602-4355
E-mail: mnavarro@uga.edu

Journal Article of the Year Awards for 2005

The Editor requested *JIAEE* Board Members to review all articles published in Volume 12 (2005) and nominate articles for the fourth annual **Article of the Year Award**. The nomination period occurred in April 2006. Criteria for article selection and nomination were the article's capacity for "enhancing the *research and knowledge base* of agricultural and extension education worldwide..." Six truly outstanding articles were nominated.

The Editor asked *JIAEE* Board members and AIAEE leadership team members to review and rank the overall excellence of each article. Following are the results of this evaluation to promote the scholarship and recognition of authors who contribute to enhancing the *research and knowledge base* of agricultural and extension education worldwide.

Congratulations to all the authors on their scholarly achievements; note that a tie occurred between two articles for second place. Please take a moment to send your congratulations to these authors for their achievements and for helping all AIAEE members achieve prominence in the research publication process.

Outstanding Journal Article of the Year for 2005

1. Shen, D., & Jones, L. (2005). A new implication for China's rural education reform: Organizational learning theory. *Journal of International Agricultural and Extension Education*, 12(1), 27-36. Retrieved June 1, 2006, from <http://www.aiaee.org/jiaee/current/V12.1.27-36.pdf>

Runner-Up Journal Articles of the Year for 2005

2. Traimongkolkul, P., & Tanpichai, P. (2005). Lessons learned and present prospects: A critical review of agricultural education in Thailand. *Journal of International Agricultural and Extension Education*, 12(3), 53-65. Retrieved June 1, 2006, from <http://www.aiaee.org/jiaee/current/V12.3.53-65.pdf>
2. Efa, N., Gorman, M., & Phelan, J. (2005). Implications of an extension package approach for farmers' indigenous knowledge. *Journal of International Agricultural and Extension Education*, 12(3), 67-78. Retrieved June 1, 2006, from <http://www.aiaee.org/jiaee/current/V12.3.67-78.pdf>
3. George, D., Birch, C., Clewett, J., Wright, A., & Allen, W. (2005). Major issues and solutions to applied climate education in Australia. *Journal of International Agricultural and Extension Education*, 12(3), 21-31. Retrieved June 1, 2005, from <http://www.aiaee.org/jiaee/current/V12.3.21-31.pdf>

Journal of International Agricultural and Extension Education

Subscription Form

The *Journal of International Agricultural and Extension Education* is a publication of the Association of International Agricultural and Extension Education. It is published three times annually in spring, summer, and fall. The *Journal of International Agricultural and Extension Education* is available in two formats for individual subscriptions. It is published in a booklet (hardcopy) version or it can be accessed through a protected Web site.

To order the current volume of the *Journal of International Agricultural and Extension Education*, please access the online Subscription Form at <http://www.aiaee.org/jiaee/journalsub.asp>, or complete the following information:

Name: _____

Title: _____

Institution: _____

Address: _____

City, State, Zip Code: _____

Country: _____

Telephone: _____

Fax: _____

Email: _____

Make checks payable to “**JIAEE**” and send to:

Gary J. Wingenbach, Editor
2116 TAMU
Department of Agricultural Education
Texas A&M University
College Station, TX 77843-2116

Annual Individual Subscription

Format:	Rate:
Booklet	USD \$45.00 _____
Electronic	USD \$30.00 _____

Annual Library Subscription

Format:	Rate:
Booklet	USD \$75.00 _____

Manuscript Submission Guidelines

General Requirements

All manuscripts should indicate the type of article—Feature; Commentary; Tools of the Profession—on the title page of the manuscript. **Feature Article manuscripts must be submitted online at <http://www.aiaee.org/jiaee/submit.aspx>** Manuscripts should not have been published or be under current consideration for publication by another journal.

The *Journal* follows the standards set forth in the latest Publication Manual of the American Psychology Association (APA). The *Journal of International Agricultural and Extension Education* is a publication of the Association for International Agricultural and Extension Education (AIAEE).

Feature Articles

Manuscripts of Feature Articles are submitted to the Editor. **Microsoft Word** files only may be uploaded online. A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. The article must include an **Abstract** (a succinct gist of the article's content) not exceeding 250 words, followed by individual sections for the **Introduction, Theoretical/Conceptual/Operational Framework, Purpose and Objectives, Methods, Findings/Results, Conclusion, Recommendations/Implications, and References**, or similar appropriate headings. Please include **Keywords** (about seven) to describe your manuscript. **There is no submission fee charged for submitting a feature article.** Feature Articles should be no longer than **20 double-spaced** (11 point font) pages (not including the title page) with **one-inch margins** on all sides. A \$10.00/page (actual pages in the *Journal*) publication fee will be charged to the lead author if the manuscript is accepted for publication after the peer-review process is complete.

Commentary Articles

Manuscripts of Commentary Articles are submitted (as an e-mail attachment) to the Associate Editor. A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. The article must include an **Abstract** not exceeding 250 words. Please include **Keywords** (about seven) to describe your manuscript. There is no submission charge for the manuscript, but there will be a \$10.00/page (actual pages in the *Journal*) publication fee assessed to the lead author if accepted for publication after the peer-review. Commentary Articles should be no longer than **eight double-spaced** (11 point font) pages (not including the title page) with **one-inch margins** on all sides.

Tools of the Profession Articles

Manuscripts of Tools of the Profession Articles are submitted (as an e-mail attachment) to the Associate Editor. A **title page** with manuscript title, authors' names, institutions, complete addresses, telephone and fax numbers, and e-mail addresses is required. Please include **Keywords** (about seven) to describe your manuscript. There is no submission charge for the manuscript, but there will be a \$10.00/page (actual pages in the *Journal*) publication fee assessed to the lead author if accepted for publication after the peer-review. Tools of the Profession Articles should be no longer than **four double-spaced** (11 point font) pages (not including the title page) with **one-inch margins** on all sides.

Post **Feature Article Manuscript Submissions** online at <http://www.aiaee.org/jiaee/submit.aspx>