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The Journal of International Agricultural and Extension Education is the official refereed publication of the Association for International Agricultural and Extension Education. The purpose 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 should 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. Feature articles go through the Journal's blind review process utilizing peer reviewers to evaluate content and readability. Reviewers are usually selected from the membership of the AIAEE. In the blind review process all reference to author(s) is removed before the manuscript is sent to reviewers.

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 and relevance to the Journal, and for readability.

Tools of the Profession Articles

Tools of the Profession articles report on specific techniques, materials, books and technologies that can be useful to 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 and relevance to the Journal, and for readability.

The Journal is distributed in one of three formats: printed copy (\$25), computer disk (\$15), or email (\$10).

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Please visit the AIAEE Website at: <http://ag.arizona.edu/~elliott/newpage/aiaeea~1.html>

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From the Editor

The Journal takes another forward step in its quest for quality, and contribution to our disciplines with the debut of this issue dedicated to the annual conference of the Association for International Agricultural and Extension Education. The need for and value of a special conference issue is predicated on the assumption that a record of the conference is valuable both from a temporal and archival standpoint, as well as for enhancing the international stature of the Association. Capturing and disseminating the ideas, events and activities provides a snapshot of the conference for readers of the Journal within the Association, as well as in agencies, organizations and institutions engaged in development and education. In the long term, the accumulated information will serve as a historical record of the growth of the Association.

This year's conference was held in Arlington, Virginia, April 4-6, and 87 persons representing 19 countries attended. The theme of the conference was "Communications Technology Linking the World". The program consisted of concurrent paper and poster sessions, an awards ceremony, a workshop on writing and reviewing for professional journals, and business and committee meetings of the Association.

We have included in this issue activities we thought would be significant and interesting without becoming burdensome for those who attended.

The Association has a tradition of recognizing outstanding achievement and service. The awards ceremony on the last day was a fitting climax to the animated discussion and dialogue, and the friendship and social interaction of the first two days. This year's ceremony was embellished by the wisdom of Bruce Lansdale and his Hodja stories, Don Meaders' continuing reports on the history of the Association, and Association awards for outstanding leadership, service, young professional, and paper and poster presentations.

The challenge of reporting paper and poster presentations was daunting. Authors work hard to put these together for a conference. To do justice to their work and dedication, therefore, is a serious responsibility. The approach we took was to focus on major current and emerging issues undergirding the presentations, and to organize and synthesize the ideas presented around these issues. It was felt that this approach would be more interesting to readers than individual abstracts. About one-half of the paper presentations and most of the poster presentations have been included in these syntheses. Conference proceedings contain the full papers and posters, and are available for \$30 a copy from Jan Henderson.

Five papers received an outstanding presentation award. They are reproduced as full articles in this issue.

The idea of organizing a workshop at the conference on writing and reviewing for professional journals had been raised several years ago. This is the year that the idea bore fruit. Excerpts from the workshop presentations will give readers a flavor of the workshop.

The piece on the Association's history is an amalgam of three reports provided by historian Don Meaders, Professor Emeritus, Michigan State University. We call this writing "a selective history..." to signify that there are gaps in our knowledge of the Association's past. We look to members of the Association and others who may have this knowledge to share with us or with Don.

A significant business decision made was the creation of an affiliate membership category and the establishment of dues for affiliate and institutional membership. Information on these and other business matters are included in the Association's business report.

Committees of the Association meet face-to-face at the conference and then continue their dialogue through the year. Much thought and work goes into the different committees as reflected in their annual goals.

Looking ahead, the 1998 conference will be held in Tucson, Arizona, April 16-18, and the 1999 conference at the University of West Indies in Trinidad. Conference details are included.

As we were wrapping up this special issue of the Journal, news came of Dr. Miley Gonzalez's appointment as Under Secretary of Research, Education and Economics in USDA, effective August 5. To members of AIAEE, his appointment to this important position of overseeing four USDA agencies with a budget of \$1.7 billion, is special because of his relationship with the Association in its formative years. In fact, Dr. Gonzalez was President of the Association in 1993-94, the same year that our Journal began publication.

Dr. Gonzalez brings to the position of under secretary a diversity of skills and insight grounded in a sound academic background, and teaching, research, extension, international, and administrative experience in the university setting combined with some early association with the private sector. He worked most recently for the last six years at New Mexico State University as associate dean and director for academic programs in the College of Agriculture and Home Economics, assistant dean and director of the Cooperative Extension Service, and head of the Department of Agricultural and Extension Education. Before that he was assistant director for international agriculture programs at Iowa State University from 1988-91, and a state 4-H specialist at Penn State University in the early 80s.

Dr. Gonzalez received his BS and MS in agricultural education at the University of Arizona, and the Ph.D. in agricultural and extension education at Penn State.

The Association is proud of Dr. Gonzalez for this well-deserved recognition and extends best wishes for success in his term as under secretary.

In putting this issue together, invaluable assistance was provided by two individuals. Cathy Hamilton, graduate assistant and Ph.D. candidate in the School of Vocational Education, prepared the writings on the awards ceremony, the history of the Association, synopses of the paper and poster presentations, and the writing and reviewing workshop. Sandra Sanders, administrative secretary in the Cooperative Extension Service, has helped me all along with the Journal, and did so again. I am personally indebted to them, and convey the appreciation of the Association and the Journal's editorial board.

We present this conference issue to our readers hoping it will give them greater insight into the Association and its annual conference. We would be interested in readers' reactions and suggestions to make improvements for next year. We hope you will be in touch.

New Editor Announcement

The Board of the
Association of International Agricultural and Extension Education
announces the position of
EDITOR (1999-2001)
for the purpose of publishing
volumes 6, 7 and 8 of the
Journal of International Agricultural and Extension Education

Applicants should send seven copies of a current vita, a letter indicating qualifications as an editor and why they desire to have the position, and a letter from the department, organization or institution head indicating department, organization or institution support of the applicant. The letter from the head must address the specific support functions available for the candidate.

Materials should be sent before February 1, 1998 to:

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Recognizing Our Own: The Annual Awards Ceremony

The awards ceremony each year is a fitting climax to the conference, offering AIAEE members the opportunity as a profession to recognize and honor people for their accomplishments and contributions. The feeling of warmth and fellowship on this special occasion is unique in our Association. For those of us attending for the first time, the overwhelming impression was one of a room filled with people who shared much, who respected one another as individuals and for their work, and of easy laughter that comes with the profound pleasure of renewed contact among old friends, and the promise of new friends.

This year's keynote speaker for the awards ceremony was Don Meaders, the Association's historian, who recollected our past as an Association and a profession and provided food for thought about the future. Much of the information he shared is included in this issue in the piece on the Association's history. Also addressing the group was Bruce Lansdale, Director of the American Farm School in Thessaloniki, Greece for 37 years, now retired, who personifies the dedication and spirit of service that our Association strives for. This year's outstanding leadership, service and young professional awardees were recognized and honored. Finally, the awards for outstanding paper and poster presentations at the conference were given. Julie Tritz, who won the graduate student paper presentation award, and Andrew Lorand, who had the best paper presentation, presented their papers.

BRUCE LANSDALE'S ADDRESS

Each year Bruce Lansdale inspires participants with his insight, wisdom, eloquence, and Hodja stories. He did it again in 1997. It is fitting therefore in this first conference issue of the Journal to feature his remarks as an acknowledgment of his unique contribution to the conference and the Association.

This year marks the thirteenth year Bruce has graced us with the now-traditional sharing of the wisdom of the Turkish sage, Nasredin Hodja. Through his Hodja stories, he enabled us to connect the conference theme of communication technology as not only linking the world, but linking each other. While praising the high quality of the scientific information he had heard throughout the conference, he hastened to remind us that what underlies the potential of communication technology is the communication of the development spirit. That spirit is what gives communication the quality not only of speaking, but of listening and loving. It is with this spirit that we look to our fundamental work as attempts to improve our relation with our fellow human beings.

We reproduce below Bruce's remarks as he said them.

Hodja was a wise man who lived in Turkey. He was there in about the 14th century, which means he's been dead for almost 500 years. So, when anybody says, "Tell me a new Hodja story," you can tell there is no such thing as a new Hodja story, because Hodja has been dead for 500 years.

Hodja is not good because you tell a joke, Hodja is good because you make a point. I've been fascinated by the subject of our conference - talking about information technology. I heard a whole series of highly professional lectures, which really impressed me. I was really overwhelmed. I told Larry (Miller) I wanted to get him on videotape and carry him in my pocket to Albania. But, there was an awful lot of talk about science. A friend of mine by reading, not by having met him, said many years ago that the man who works with his hands is a laborer, the man who works with his hands and his head is a technician, and the man who works with his hands, his head and his heart is an artist. And, in development, there is another element besides the hands, the head and the heart: I would call this the spirit. And, I have a sense that unless you find the spirit person within you who finds expression within

the development world, all we can do in the science is improve the technology, but not necessarily improve our relation with our fellow human beings.

There's a sense of how we communicate, and this is what we've been talking about, communicating. Today you're going to get two Hodja stories for the price of one.

Hodja, about three times a year would put a letter in an envelope, seal it and send it to his old dear friend with whom he'd grown up. When they'd parted from the village they agreed that they'd exchange letters every year, two or three times.

One day Hodja's helper took the letter down to the post office but it hadn't been sealed. So the helper looked inside and found a blank sheet of paper. "Well," he thought, "This is pretty strange." But he sealed the letter and sent it. When he got back he said, "Hodja, what have you been giving me all this time? A blank piece of paper. What, you didn't want to admit that you're illiterate and can't write a letter? So you were just pretending?"

"Ah, my friend," answered Hodja, "My friend and I have known each other for 50 years. When we parted 45 years ago, we agreed that we would exchange a message, but we both discovered that no matter what words we used to try and express the feelings in our hearts, there was no way that the written words could express it. So we only exchange blank letters, and each of us knows that this is a message coming from the heart of the other person."

There is no science in Hodja's letter, there is no technology in Hodja's letter, but there is an expression of the heart. When I was your age as a young graduate student and I went to work in Greece for the first time, we were invited to a conference way up in the mountains for all the foreign volunteer agencies. It was an international group like this, about 35 of us there, and we got some token integration by a couple of Greeks who could speak a little English to be part of it. The third day, a teacher who'd been sitting in the background and never said anything, came up to me and said, "Can I say something?" "Sure," I said, "That's why we brought you here." "Can you translate?" he asked me. "Sure, I'll translate for you." And here is what he said to the group. "Every man has three tongues, three languages. The first is the language of the prosecutor, which condemns, the second is the language of the guardian which criticizes, and the third is the language of the brother. When we're speaking to people of our own culture, our own background, our own training, we can speak any language that we want. But when we start talking to people of another background, of another society, we must always limit ourselves to the third language, the language of the brother which has the quality not only of speaking, but of listening and of loving."

You may have heard Professor Martin, and Professor Swanson, Professor Miller, and Dr. this and Dr. that today, but behind them is a Burt, and there is a Bob, and there is a Larry, and a John, and a Dave. And behind all those scientific concepts is somebody who has in his heart a desire to give what he has and share it in the most efficient manner. This is what's been impressive about the scientific part of this conference.

Last Hodja story and I quit.

In Hodja's village, there was a monk way up on the mountain in a little shack. Hodja was distressed because this monk, everybody knew he had a gold coin. And there was a great eating inside of Hodja. "I am Hodja! I am the religious leader, the educated man! I am the judge of this community. Why is it that dumb old illiterate man up there has that gold coin and I don't have it?" So finally after worrying about it for years he screwed up his courage and walked up the side of the mountain two hours and knocked on the door. Out came this humble little old monk. "Hodja," he said, "What an honor you've come to see me! Oh yes!"

Hodja said, " My friend, I want something that you have, that I should have."

"Oh, anything you want Hodja."

"You have a gold coin and I want you to give it to me."

" Oh, you want the gold coin, Hodja, take it." And the monk went and dug in the trunk and brought out the gold coin and gave it to Hodja.

Hodja was just so pleased. He tucked it into his pocket and went walking down the hill playing with the gold coin. And his whole problem had been solved. Two hours later, there was a knock on the monk's door. He went out and there was Hodja again.

"Hodja," he said, "What an honor, twice in one day you've come to see me!"

"My friend," he said, "Take back the gold coin but give me something much more valuable."

"Oh, anything you want Hodja."

Hodja replied, "Tell me the secret of how you could give it away so easily."

OUTSTANDING SERVICE, LEADERSHIP AND YOUNG PROFESSIONAL AWARDS

The Awards and Recognition Committee recognized three outstanding agricultural and extension educators: **Dr. Francis C. Byrnes**, Outstanding Service Award, **Dr. Roger Steele**, Outstanding Leadership Award, and **Dr. Deirdre M. Birmingham**, Outstanding Young Professional Award. The citations read on behalf of the awardees are drawn from to highlight their career and achievements.

Dr. Francis C. Byrnes, Outstanding Service

Dr. Francis Byrnes has made outstanding contributions during his highly productive career spanning almost 60 years. From his first state award in 1939 for "service to agriculture" as editor of a weekly newspaper in rural Iowa, to his present highly sought after and active consulting in training, communication, and management, Dr. Byrnes sought to improve, promote and develop international agricultural and extension education to benefit rural livelihoods. He developed approaches to informational, motivational and instructional communication that addressed directly the knowledge, understanding, perceptions, and desired changes in the audiences and institutions critical to socioeconomic issues and policies.

Byrnes improved communications among scientists, extension personnel, farmers and the general public throughout his 20 years with the Rockefeller Foundation. In 1963, he was posted by the Foundation to the International Rice Research Institute (IRRI). Through seminars and training programs designed to inform and teach farmers about new rice varieties and methods of production, he introduced the scientific and administrative staffs of North America and Asia to the basic concepts of managing and influencing human behavior through effective communication. This process was critical to the increase in rice production in Asia. Almost 6,000 rice scientists, educators and extension workers around the world are alumni of the IRRI training and education courses that Dr. Byrnes initiated.

In 1968 the Foundation transferred Dr. Byrnes to the Centro Internacional de Agricultura Tropical (CIAT) in Colombia, a research, training and conference center concentrating on crop and livestock production in the lowland tropics. While there he served as Head of Communication, Training and Conferences, as well as Secretary of the Board of Directors. CIAT became a model for other international centers as they introduced new crops and production practices.

In late 1975, the Foundation transferred Dr. Byrnes to New York to establish the International Agricultural Development Service (IADS), a non-profit agricultural development organization specifically designed to assist developing nations plan, organize and improve the management of their agricultural research, development, extension and education systems. Through IADS consultations and

training, he significantly influenced agricultural institutions in many countries, particularly Indonesia, Bangladesh, Pakistan, and the Dominican Republic.

Frank Byrnes' leadership has been important to the success of the international agricultural research centers in the Consultative Group on International Agricultural Research (CGIAR). He had many key assignments within CGIAR, including secretary of the annual meeting of Centers' directors. Dr. Byrnes has been credited with showing leaders in international agricultural development the importance of communication in programs to serve the small-holder farmers of the world.

Since his retirement on July 1, 1983, he has worked actively as a senior associate of Winrock International Institute for Agricultural Development; his consultations in developing countries always seeking innovative ways to help relieve poverty and hunger. Those who have worked with him marvel at his wonderful enthusiasm for the job at hand, and his inspiring commitment to development in general. Communicators, researchers, extension workers, and rural people concerned with agriculture in many parts of the world owe much to his teachings, his support, his wisdom and his willingness to share what he knows and believes with others.

Dr. Roger Steele, Outstanding Leadership

Dr. Roger Steele is a Life Fellow with the W. K. Kellogg Foundation. He teaches at Cornell University and is a past President of AIAEE. Dr. Steele also works as a consultant with the Sasakawa Fund for Extension Education and Winrock International. With over 20 years of professional experience, he has served as a consultant for relief and development programs in over 15 countries throughout the globe.

Dr. Steele's roots stem from his youth spent on a dairy and crop farm in northeastern Indiana. He draws from his background in program design, planning, monitoring, evaluation and teaching to assist in the conceptualization of the many innovative programs that he has helped shape. He has offered rural extension services for small farmers, and provided training, extension education and organization building advisory services to numerous non-governmental organizations and universities. Throughout his career, Dr. Steele has remained an articulate trainer and advocate of grassroots development. He has the ability to gently and sensitively understand peoples' felt-needs. In the end he is able to get to the heart of the effort with an outcome that is always more than anyone expects.

Roger Steele sets goals and then achieves these goals. He has a remarkable characteristic of being persistent against impossible odds. Roger is able to walk into a project in any country in the world and help to establish goals, objectives, and values. Perhaps one of the greatest achievements of Roger's career is that he has helped many organizations develop a shared vision through the act of discovering their shared values.

Dr. Steele has been instrumental in building the lives and careers of many young professionals. He derives a special satisfaction when he is able to make a difference in the lives of people. A mark of a true leader, Roger has created many new leaders through his support and mentoring relationships.

A story goes like this: A number of years ago, a major donor approached Winrock International with the idea that they wanted Winrock to manage some fellowships for African professionals in the U.S. and European universities. Dr. Steele resisted the idea, arguing that these funds could be better spent by building the capacity of African universities. A lesser leader might not have hesitated at funds attached to an ill-conceived program. Although the donor was not convinced of the idea at first, the program that he personally and professionally fought for in 1992 is now a reality. The Sasakawa Africa Fund for

Extension Education has helped to train many extension professionals as well as to build the capacity of extension education throughout Africa.

Roger Steele's extraordinary dedication, professional competence and leadership exhibited in support of international agricultural and extension education has earned him the respect of professionals from around the world.

Dr. Deirdre Birmingham, Outstanding Young Professional

Dr. Deirdre Birmingham has made significant contributions in the many roles that she has fulfilled around the world. She has been a trainer for the Sustainable Agriculture and Natural Resources Management in Burkino Faso, and a Fullbright Scholar in Côte d' Ivoire; worked with the Land Tenure Center at the University of Wisconsin-Madison; volunteered with the Farmer to Farmer Program in Senegal; worked as a midwest University Consortium intern in the World Bank; served as consultant with the McKnight Foundation, worked as Fellowship Manager with Winrock International, and assisted many farmers as Research and Extension Officer in Kenya.

Dr. Birmingham completed her Ph.D. from the University of Wisconsin-Madison in the spring of 1996 and continues to work on international agriculture issues from her base in Atlanta. During her studies she performed several catalytic roles in working with other students and with faculty interested in international agriculture. While still a graduate student, she undertook a short-term consultancy with Winrock International to help develop training protocols in Africa. She also served as trainer in Burkina Faso for the SANREM/CRSP project. In this capacity, she conducted a one-week intensive workshop for the interdisciplinary field research team on indigenous knowledge recovery methods.

Dr. Birmingham is a true model of servant leadership. When she is given a task, she always adds value to her work by going well beyond the assigned role. Her goals and her career have been aimed at helping the poorest of the poor. While living in Kenya, she was assigned to work among the rural poor to develop agricultural extension and credit programs. In Kenya she developed conversational fluency in Kiswahili and most importantly, many personal relationships. She is humble and caring. She is a leader who has a passion to make a difference.

Dr. Birmingham is a strong, independent and creative thinker whose international service and experience have shown remarkable accomplishments. As Fellowship Manager at Winrock International, she managed both degree and nondegree training for young agricultural professionals from around the world helping over 150 fellows from 11 different projects. She has accomplished much through her service with the poor, her training activities in Africa, her mentoring of students from around the world, and her research in agriculture.

Dr. Birmingham portrays an unusually high quality mix of practical experience, academic training, and career commitment. She is well respected and recognized for her work by professionals from around the globe. Her research activities have focused on how to incorporate local knowledge in development work from a combination of technical, social and educational perspectives. Dr. Birmingham exhibits the type of dynamic leadership that is truly inspirational to all young professionals.

PAPER PRESENTATION AWARDS

This year's paper presentations revealed remarkable insights on the directions of thought, practice and research in agricultural and extension education worldwide. They were judged on clarity of purpose,

methods and data sources, clearly articulated theoretical/philosophical themes, meaningful content, and educational importance. Paper presenters recognized were:

1. Julie A. Tritz and Robert A. Martin, Iowa State University (Graduate Student Award)
"The Collegiate International Experience: Criteria For Success"
2. Andrew C. Lorand, Arlen W. Etling, and Edgar P. Yoder, The Pennsylvania State University (Best Paper Award)
"Biodynamic Agriculture: A Paradigmatic Analysis"
3. Burton E. Swanson, University of Illinois at Urbana-Champaign
"The Changing Role of Extension in Technology Transfer"
4. Arlen W. Etling, The Pennsylvania State University
"A Case Study in Collaborative Consultation"
5. Joe Dale, David Acker, August Ralston, Steffen Schmidt and Mack Shelley, Iowa State University
"Iowa Agribusiness International Needs Assessment: Implications for Education"

POSTER PRESENTATION AWARDS

For the first time this year, the Scholarly Activities Committee judged poster presentations. They were evaluated on their technical content, originality, innovativeness and creativity. Judges questioned, "Does the poster convey a message and does it do it easily?" "Is the topic one of importance?" "Is the display well planned, easily read and well constructed?" Poster presenters recognized were:

1. Kathleen M. Jones, Lower Dauphin Middle School
"What in the World is Going On?"
2. J. Mark Erbaugh, The Ohio State University
"Participatory Integrated Pest Management in sub-Saharan Africa: Merging Local and Scientific Knowledge Systems"
3. Michael E. Newman, Matt R. Raven and Tina M. Day, Mississippi State University
"The Effects of World Wide Web Instruction and Learning Styles on Student Achievement and Attitudes"

One Eye on the Rearview Mirror: History of the Association

Revisiting the roots of the present-day Association for International Agricultural and Extension Education (AIAEE) is important. It is important to look at the past as prologue to the future. We might ask ourselves, "What was the original vision?" "What are the lessons learned?" "Are we still communicating the same things as when we started?" "Are we talking to the same groups?" Or, maybe a better question, "Are we talking to more than ourselves?" (Meaders, 1997). Probing of the past enables us to learn from where we have been.

The idea for an association of professionals concerned with agricultural and extension education in the international arena germinated in the agricultural teacher education community.

What began as the International Agricultural Education Committee within the American Association of Agricultural Educators (then named AATEA) during the early 80s grew to enough significance to warrant special two-hour sessions at the Association's annual meetings. This group of agricultural teachers called for a forum to discuss the role of agricultural teacher educators in international work. They expressed interest in exchanging information about programs with professionals from other countries, and shared concerns for the lack of visibility and impact of agricultural education efforts in international development. Also at issue was the need for greater use of formal and non-formal educational programs at the secondary and post secondary levels. These educators called attention to the need for programs that would constitute a system of extension with support for professional development, policies for promotion, and the systematic preparation of new workers through pre-service instruction.

By the late 70s the meetings attracted a group of 25 to 35 persons who met to hear a scheduled speaker and then respond through a panel discussion. Interest and discussions at the meetings led in 1982 to the compilation of the Directory of Agricultural Educators with Experience and/or Interest in International Education (Meaders, 1982).

International Agricultural Education Seminar, Sam Houston State University, April 1983

In 1983, funding from a Title XII strengthening grant to the Office of International Programs allowed Sam Houston State University in Huntsville, Texas to host a seminar entitled, "Utilization of Secondary Agricultural Education Programs for Rural Development in Third World Countries: The Unexploited Element in Development Programs". The keynote speaker, Pep Martins, focused on the need for strong national systems for agricultural education as well as some means for focusing international cooperation. Pointing to the failed attempts to transplant the U.S. extension system and the U.S. vocational agricultural system without regard to national policies and examination systems, Martins advocated the establishment of an International Center for Agricultural Education and Rural Development (Seminar Proceedings, 1983).

The seminar focused on secondary agricultural education, its relationships to technical and professional agricultural education, and the need for secondary education to be connected with extension and research. Important to the eventual formation of AIAEE was one seminar committee's charge to establish "...an international organization of agricultural educators with interest and capability in international education." A second charge was "...to develop a mechanism for increasing secondary agricultural education in developing countries through an international center for secondary agricultural education."

At the AATEA meetings at the American Vocational Association in Anaheim, December 1983, Sam Houston's David Riley closed the Innovations in Agricultural Teacher Education session with a speech advocating the formation of an association for international agricultural education. Although there is no documentation linking the meeting with subsequent developments, this seed might have fallen on fertile soil, as 1984 proved to be an important year for the Association.

Kansas City, February 1-3, 1984

Coordinating and communicating plans for the Kansas City small group meeting, Riley outlined four objectives for the 32 agricultural educators and development specialists in attendance:

1. To review different approaches for enhancing cooperation among interested international agricultural educators in their effort toward agricultural education development in the developing countries.
2. To review policy directions and opportunities concerning agricultural education in the World Bank and USAID.
3. To explore the state-of-the-art of agricultural education in developing countries.
4. To develop a plan of action for international agricultural educators based on the results, recommendations and proposals formulated at the meeting.

Although ideas for names of an international organization as well as suggestions for the purpose of the prospective organization varied, the participants unanimously supported the development of an association. On February 3, 1984, the newly established Association for International Agricultural Education (AIAE) adopted the motto: " A professional association committed to strengthening agricultural and extension education programs and institutions in developing countries " (Thuemmel, 1985). AIAE's primary function was to provide a professional association and network of agricultural educators (vocational agricultural teachers, teacher educators, extension personnel, state specialists, and others) who shared the common goal of improving and strengthening agricultural education programs and institutions, especially those in the developing countries.

In the brochure developed to disseminate information about the AIAE to promote membership enrollment, specific objectives of the newly established organization were stated (Thuemmel, 1985):

1. More clearly articulate the role of agricultural education in developing countries.
2. Develop state-of-the-art papers on agricultural education in developing countries.
3. Establish a continuing dialogue within the profession on international agricultural education on a global scale.
4. Establish a continuing dialogue between AIAE and donor agencies for international agricultural development.
5. Establish a roster of professionals in agricultural education who could provide the expertise needed to assist funding agencies and developing nations to plan and implement agricultural education programs and institutions.
6. Encourage research within the profession which will have an impact on programs in developing countries.
7. Improve the skills and knowledge of professionals who want to work in international agricultural education.

Riley sent a memo dated February 7, 1984 to the 32 participants at Kansas City requesting an evaluation of the meeting, and reminding them of the Association for International Agricultural Education Organization Committee which had been appointed at the meeting. The committee consisted of Frank

Bobbitt, Riley, Hugh Rouk, Burton Swanson and William Thuemmel. Thuemmel, on February 24, 1984, followed up with a memo to the committee detailing arrangements for a proposed one-day meeting.

Working in conjunction with AID Agricultural Education Officer, Edna McBreen, Thuemmel outlined the purposes for a meeting to be held in Washington D.C.

1. To develop the AIAE organizational structure.
2. To seek foundation support for AIAE activities and operations.
3. To strengthen linkages with AID and other international organizations.
4. To plan ways of more fully involving the agricultural education profession in assisting AID to accomplish its objectives with respect to agricultural education and training.

At that meeting, held April 6, 1984, a constitution was adopted and officers elected for the newly formed Association for International Agricultural Education (AIAE).

Context of International Interest

To understand the forces that led to the formation of AIAEE in the late 80s, one has to view the major changes that were occurring in education and agriculture in the U.S. During the 60s and 70s there were changes in funding, program administration and curricula. Agricultural education was being viewed in a much broader way; relationships to other fields of vocational education were changing and funds became available for research (Meaders, 1997). National visions had grown into international perspectives.

This increase in international interest can be tracked by the number of research activities documented in major agricultural education journals and newsletters. Using the Journal of Agricultural Education and the Newsletter of the American Association of Agricultural Educators as sources, Meaders (1997) documented the extent to which agricultural and extension educators were reporting research and other activities related to the international dimension of agricultural and extension education. Meaders used a limited review of the two publications by selecting two consecutive years at 10-year intervals, starting with 1964-65 and ending with 1994-95. The Newsletter review began with the 1974-75 segment because it began its publication in 1967.

The review of the journals and newsletters provided both a quantitative and a qualitative perspective about the international dimension of activities reported by members of the profession. Meaders found that the two-year time periods of 1984-85 and 1994-95 clearly indicated an increased volume of reported international activities compared with the earlier periods. He observed that the Caribbean and African regions dominated international activities in the 1984-85 period. This was not unexpected since funding by governments, foundations and non-governmental organizations (NGOs) of development activities was heavily focused on those regions. With the fall of the Berlin Wall and the collapse of the USSR, priorities for funding agencies have shifted. The 1994-95 focus was on Asia and Europe.

Meaders' review also showed that 35 different educational institutions reported on their involvement in international agricultural and extension education activities. Although not all institutions reported on their involvement, and not all of the international agricultural and extension activities were reported by the institutions which did report, it is apparent from the data that the number of institutions reporting involvement peaked in the 1984-85 period.

Changes in the way professionals in agricultural and extension education were communicating were reflected in the Newsletter. After a tenuous beginning, the Newsletter itself became one of several key means for communication and coordination. The litany of activities in which agricultural and extension

educators reported involvement was long and broad. Some examples include long-term consultancies, brief one or two week workshops, study abroad programs for international and U.S. graduate students, observation tours and special seminars for farmers, agribusiness managers and others from nations attempting to develop market-driven economies, and study tours to other countries for young agribusiness leaders in states such as Nebraska and Ohio.

The Newsletter reported U.S. professors going abroad to study educational policies and programs. Frequently the professors were in attendance at international meetings for the purpose of presenting papers. For example, in 1974, Dr. Charles Drawbaugh from Rutgers University attended the World Assembly of NGOs and the Second Annual Meeting of the Governing Council of the U.N. Environmental Program at Nairobi, Kenya. This led to a summer fellowship program in environmental education for Kenyan teachers. That same year, the University of Illinois reported the need to expand the offering of the course "Agriculture of Developing Countries" to two sections per term with 35-40 students per section. Dr. Gordon Swanson, a University of Minnesota professor, led a European study seminar for eight leaders in the U.S. Vocational Professional Development Program.

Readers' review and the examples cited exemplify the interest and activity in learning from others. International agricultural and extension education was a two-way street. It wasn't simply a transfer of developmental ideas from the U.S. to other countries, but there was much effort placed in finding out what others were doing.

The Years Following Kansas City

In the first few years following its creation the AIAE sought to serve as a catalyst for action in associating agricultural educators around the world so that these individuals could bring their collective expertise to bear on the problems of human resource and agricultural development. With this goal in mind the AIAE played a unique role in development. Although other international development agencies were concerned with world development in general or specific national interests, no other organization focused on the particular needs of agricultural and rural development.

The urgency to form an association seemed to spring from this growing awareness that international activities had been a basis for many agricultural and extension education leaders in the U.S. to expand their knowledge and understanding of other countries. But equally important, such involvement had been the basis of getting a better understanding of the U.S. systems of education and agriculture.

In April 1989, as AIAE, now known as AIAEE (Association of International Agricultural and Extension Education), approached its fifth annual meeting in Washington D. C., Edna McBreen (1989) wrote about the importance of AIAEE in international agricultural development, and the Association's beneficial role in agricultural education in the United States.

McBreen pointed to the positive learning that occurs when individuals and organizations examine themselves in relation to the rest of the world. Highlighting various characteristics of the United States economy, she identified areas of the global economy essential to the preservation of the North American lifestyle. She argued that to provide the leadership necessary to help North American clientele understand the world economy and their place in that global environment, more knowledge was necessary of situations world-wide. She believed that the variety of backgrounds represented by the AIAEE membership teamed with a common concern for international agricultural and extension education brought together an equivalent variety of resources for problem-solving, research and networking. "If AIAEE's goal is to be an international organization, and include agricultural and extension educators and representatives from related fields from around the world...AIAEE's

membership and leadership of the organization will have to take the responsibility of helping the profession embrace a global perspective" (McBreen, 1989, p. 23).

Perspectives for the 90s

AIAEE member perceptions in two research studies provide some perspectives for the 90s.

In a 1994 study, Dennis Eaton, Rama Radhakrishna and James Diamond examined programs and services AIAEE offered or should offer as perceived by its members. This snapshot of an organization 10 years following its inception demonstrated the broadening scope of the Association. The AIAEE had attracted membership from the agricultural and extension profession and related areas from nearly 50 countries. The membership roster showed that of the 157 AIAEE members, 108 (69%) were from the United States and 49 (31%) were from other countries. A noticeable change was the increase in the number of graduate student members (34%). Fifty-three (70%) of the respondents were either U.S. citizens or permanent residents, while 23 (30%) were non U.S. citizens. The non U.S. citizens represented various geographic regions including Asia, Africa, Europe, Middle East, Central America, South America, and the Caribbean.

Significant perceptions of members included (a) a desire for more information regarding employment opportunities in international agricultural development, (b) a need for increased understanding of economic, political and social situations of other countries, and (c) greater emphasis on the use of the Association's Journal and Newsletter to provide a forum for information dissemination between annual conferences. The authors concluded that publicizing the activities of the organization outside its membership would help create awareness and develop linkages with other organizations for possible cooperation and collaboration, and recommended that the AIAEE board explore possibilities of developing linkages with various organizations involved in international agricultural development.

In a second study, reflections of AIAEE members were gathered by Michael Campbell and Robert Martin (1995) to develop an understanding of the philosophical assumptions of how AIAEE should operate in today's complex world. They interviewed 17 members who were active in the organization, comprised a balance of gender and international/U.S. participants, included several founders of the organization, and exhibited a willingness and ability to participate.

Focus areas included the philosophy of agricultural education, the philosophy of international agricultural and extension education, particularly AIAEE, and the roles of race, class, and gender relating to international agricultural and extension education.

As an organization, the authors found that AIAEE had attracted talented people who were gifted with a "caring-for-others" attitude. It had grown from an idea into a fairly well-defined organization, and had developed several excellent methods of sharing and disseminating information, such as the annual conference, the Newsletter, and the Journal. The diversity of professionals from different cultures and disciplines within AIAEE was seen as both a strength (richness of resources) and a weakness in defining itself as an organization, and planning its future direction.

On the important issue of communication, the authors recommended that a worthy goal of AIAEE would be to develop non-hierarchical, inclusive communication within the membership that allowed for men and women, younger and older members, graduate students and Ph.D.s, and North American and international members to relate on equitable terms.

With regard to curriculum development, most respondents felt it was important to ground any new curriculum in traditional agricultural education areas. However, some of them expressed the need for such education to be more broad based to include such subjects as philosophy, psychology, anthropology, mythology and spirituality. It was suggested that AIAEE should explore the possibility of developing a new discipline of international agricultural development education.

Campbell and Martin concluded that development organizations such as AIAEE must strive for diversity. They must make a concerted effort to attract members from a broad spectrum of academic disciplines and cultural backgrounds. If they do so, they will offer an ideal home for development professionals to work on their own development, as learners and as conscious human beings. This consciousness, they believe, is the way by which professionals will be able to develop trust in other humans, and the insight to envision and bring about a healthier and happier world.

Reflections of AIAEE's Past Presidents

During the awards ceremony at the 1997 conference, current President Jack Elliot elicited spontaneous organizational self-reflection from the past presidents of AIAEE. Their remarks capture what has been written and said about the evolution and spirit of the Association.

AIAEE is comprised of a great group of people who exhibit an unusually high degree of camaraderie and fellowship when they come together. There has been a noticeable increase in participation of graduate students who frequently stay within the organization. Older members appreciate their contribution and have been gratified by watching the growth and development of younger colleagues.

Increased participation from members outside the U.S. enriches the annual conferences and provides linkages that existed only in the minds of the most visionary in 1984.

Much has been learned from the international students who have enriched U.S. nationals with their decision to study in this country. AIAEE has been a better organization because of the participation and the sharing of viewpoints by international students. The deliberate attempt as an organization to achieve a greater degree of inclusiveness with students, faculty and international members is beginning to be realized although much remains to be accomplished in this area.

In the beginning, the big question in the minds of people was whether or not this idea of an international association was really going to work. Perhaps the most important component to the maturing of AIAEE is its continuity of leadership and membership. AIAEE's history is marked by a spirit of cooperation and collaboration that sustains and nourishes the organization.

The Role of Research Within the Association

Meaders, from his historical perspective, pointed out that the quantity of research has greatly increased. And, at about the same time that AIAEE started its own journal, the amount of research related to international dimensions of agricultural and extension education being published in the Agricultural Educators Journal showed a marked increase. The amount of research reported at our annual meetings increased year by year as well, with more selectivity of papers.

He challenged the Association to think about the role of research. He posits that the more research that is conducted, the more answers we should have. Yet, it seems that the more we think we know, the more we realize we don't know. Given this dilemma, he asked why the increase in research? Borrowing from Peter Bernstein (1996), Meaders stated that sophisticated research techniques used today are fundamental

to the design and plans for entrepreneurs to launch new businesses, give rise to explorations of the unknown mainly because of the reduction in risks by the decision makers.

Meaders continued stating how we are familiar with the lack of control of risk to farmers. But, he questions, how has research brought a reduction in the risks for disease and crop failures? Meaders replied to his own question with the answer that agricultural research is designed to help us make better decisions. He quoted from Aristotle, "What we have to learn to do, we learn by doing." He compares those words with the foundation for a part of the FFA Motto: "Learning to do, Doing to learn." Meaders concluded his historical overview with the words, "We have been doing much and much must be our learning."

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Cutting Edge with Care: Synopsis of Paper Presentations

Any attempt to capture the essence of years of work involving many people, experiences, subject areas and cultures is presumptuous. In one article, more so! Nevertheless, we are committed to bring to the membership this synthesis of ideas on cutting-edge issues addressed in the papers presented at this year's conference.

A total of 40 papers were presented. Five paper presentations judged to be outstanding are included in their entirety in this conference issue. Seventeen of the remaining 35 papers were selected for inclusion in this synthesis. The choice of which papers to include was guided basically by their relevance to the ideas which have challenged agricultural and extension education professionals to new ways of thinking about, experimenting with, and acting on current and emerging issues. In debating how to present the material, we felt it would be counterproductive to rewrite or paraphrase any individual's paper or the papers of a group of individuals. Rather, we have selectively taken appropriate words and/or passages from various authors' works and tried to integrate ideas in a coherent manner. By so doing, we hope to focus on trends in the life and work of our membership, and provide a reflection of some of the directions taken in our profession.

A Shifting Paradigm

It would appear that an overarching theme distilled from the conference deliberations is contained in a fundamental question: Does our work reflect and portend for the future a shift in the agricultural and extension education paradigm? Andrew Lorand ([Biodynamic Agriculture: A Paradigmatic Analysis](#)) quoted Egon Guba's definition of paradigm as a set of beliefs that guide action, and challenged us with provocative questions that strike at the heart of knowledge, cultural relations and communication: Can we really know about things that are quite different from ourselves? Is it even possible to understand, to see, to recognize things that are not like ourselves? Can we develop beginning criteria for looking at, recognizing and maybe even analyzing paradigms or systems of agriculture that are other than what we are used to? In so doing, can we develop forms of communication that are, perhaps, more appropriate to other systems of agriculture? Finally, can we apply these criteria, and the knowledge and the communication skills gained, to a particular system and derive some knowledge from that?

These are crucial questions for those of us working in agricultural and extension education. Evidence from the papers presented points to a shifting of some of our traditional belief systems. This shift is causing us to question previous actions, and experiment with new models of education and communication. There is an increased awareness of the need to approach communication, learning and knowledge in new ways. Current institutional arrangements, indeed entire systems of training agricultural and extension educators, are being challenged. The promise of advances in communication technology is celebrated; at the same time, the development and use of appropriate technology in changing contexts is emphasized. The important role of women in agriculture around the world is reiterated, and a call issued for more effective extension and agricultural education programs that reach female agricultural producers. The linear, top-down, expert model, that some would label the traditional technology transfer model, is being challenged by a participatory model that invites two-way communication.

Many of the issues surrounding these shifts in the traditional agricultural and extension education paradigm, and ideas on how to address them are reflected in principles and a theoretical base that is sound and growing. The question that needs to be asked is how are these principles working in practice? These are the issues with which we deal as individuals, and as a profession.

Changing Paradigm of Technology Transfer

Several presenters spoke of fundamental weaknesses in traditional technology transfer models. At the risk of oversimplifying educational strategies that have experienced successes as well as frustrating defeats, these traditional models are characterized by a top-down, one-way transfer of technology with little input from farmers.

Dorothy Wanyama and Roger Steele (Participatory Training Programs that Prepare Women to Enter the Mainstream of Extension) were critical of the Training and Visit Extension System (T&V) and the commodity-based extension system adopted in several countries in that these systems excluded small farmers and women from the development process.

T&V had been developed to increase efficiency of operations, and emphasized a transfer of technology paradigm to address agricultural problems. Experience with the system showed, however, that it was not successful in reaching small farmers. Furthermore, using contact farmers as the focus of the program delivery process tended to reinforce local privilege for the few better-off farmers because contact farmers were either traditional village elders or better-off farmers. This marginalized disadvantaged farmers, including women.

Concerned with a particular crop or commodity and designed to promote export crop production, the commodity-based extension system worked through organizations whose managers preferred to work with the heads of households, who in most cases are men. Consequently, women farmers were left out.

In a similar vein, Latif Lighari's discussion of the extension system in Pakistan (Communications Technology and Agricultural Extension in Pakistan) blamed the negligible impact of Extension programs on agricultural growth on basic flaws of the traditional model. He called for a major structural reform in revising extension from a top-down, supply-driven system to one whose goal should be to create a demand among farmers for information, which could then be satisfied by extension workers. The extension service, according to Lighari, should concentrate on participatory problem-solving with farmers at the local level. Village extension workers often lack adequate training. A participatory approach of this kind, therefore, would require substantial improvements in the education of farmers and training of village extension workers.

Remileku Rakey Cole (Communicating Technology Among Farmers in West Africa) echoed frustration with traditional approaches of innovation-diffusion of technology. Using the example of the 1980 Jahally Pacharr rice irrigation project in Kenya, her analysis shed light on development theory assumptions that prevented full development of the project. Problems stemmed from an inadequate appraisal of the social context, project planning that did not incorporate the existing practices of the farmers, and lack of farmer participation in the planning process. This lack of participation by those who should have been involved created separate agendas and goals for farmers, and for the government sponsor. Poor communication between government extension workers and farmers exacerbated the problems.

Cole's study raises questions concerning the assumptions or beliefs that educators bring into international development. Her findings demonstrate that often educators and practitioners have ideals which do not converge with the realities in the field, and that leave little room for incorporating local knowledge in the design and diffusion of new technology.

If extension workers and practitioners do not increase their sensitivity to this new demand for more participatory educational models, they are likely to be left behind. Robert Agunga and Ana Kazan (Extension Communication and Sustainable Agricultural Training Needs of the Innovative Farmers of Ohio) presented their findings on this issue with a sustainable agriculture group, the Innovative Farmers of Ohio (IFO). Sustainable agriculture is gaining ground as farmers become more aware that it not only makes environmental sense but economic sense as well. In essence, sustainable agriculture must be environmentally sound, economically viable, and socially responsible. These three factors combine to make sustainable agriculture perhaps one of the fastest spreading innovations today.

Unlike innovations such as fertilizers and hybrid seed varieties which were largely developed, promoted, and systematically disseminated by research institutions to farmers via extension, sustainable agriculture is largely the result of the experience of farmers, particularly limited resource farmers.

What is clear from the literature on sustainable agriculture is that contrary to expectations, extension agents are not the prime movers; rather, they remain largely skeptical observers. Information flow seemed to be at the root of the problem. Almost 80% of IFO farmers said they were not satisfied with experiment station recommendations. A significant finding was that 85% of IFO farmers want to conduct their own research. Although open to extension involvement, IFO farmers wanted to be active participants in the communication processes of sharing information about sustainable agriculture.

Thus, the opportunity exists for new relationships, linkages and communication patterns between farmers and extension professionals. Researchers at experiment stations could conduct on-farm research by teaming up with the farmers. Agunga and Kazan are convinced that extension agents have a vital role in this process. However, they conclude that if extension is to effectively serve sustainable agriculture farmers, then it must assume a facilitative role, not a dominant one.

Image of Extension

In addition to weaknesses in traditional models of technology transfer, the traditional image of the extension educator suffered criticism as well. Frank Bobbitt and Usman Adamu (The Image of Michigan State University Extension as Perceived by County Extension Advisory Committee Members and Extension Field Staff in Michigan) pointed to the importance of image in that any responsive organization, institution or agency has a strong interest in knowing how the public perceives the programs and services it is providing. Although their study showed that lay leaders and institutional faculty had an overall positive perception of Cooperative Extension in the U.S., they concluded that their view of extension is as out of date as the image of Ozzie and Harriet representing today's typical American family.

Robert Agunga (A Survey of Farmers' Extension Communication Needs in Zambia) concluded that a major obstacle for the Zambian government's well-intentioned innovations in agricultural policy was the farmer's lack of trust in the ministry of agriculture and its extension service. In spite of a new focus on small-scale agriculture (10 acres or less), the category into which over 70% of the farmers fall, Agunga found that little or no information exists on the real needs and concerns of these farmers. Nor does any plan exist to elicit input and involvement in the agricultural development decision-making process. Without this information, he implies that policy makers will continue to make assumptions about farmers' needs and problems from a top-down approach. Until the image of both the ministry of agriculture and its extension agents improves, Agunga sees little chance for success that extension messages will be accepted by farmers.

If farmers in Zambia do not have confidence in what extension can do for them, one logical response is to look at the training of extension personnel. Robert Agunga and Mary Kimball (Participatory Management Training Needs of Extension Personnel in Zambia) designed and administered a training assessment tool to identify training needs of field extension officers who work at the village level. They found that the officers were severely deficient in interpersonal communication, print communication, radio broadcasting and programming, audio visuals, and organizational communication skills, and recommended training programs to acquire these competencies.

On the theme of training, Mohammad Chizari, Ahmad Pishbin and James Lindner (Self-Perceived Professional Competencies Needed and Possessed by Agricultural Extension Agents in the Fars Province of Iran) indicated that about 225,000 extension personnel (40%) in the developing countries have inadequate technical and extension education training. They point to an overemphasis on technical competency and neglect of professional competency as impediments to progressive extension organizations. In Iran, their study showed that the lowest competencies possessed were in the critical areas of (a) assessing farmers' needs, (b) developing an integrated program, and (c) using existing local social groups.

Extension's Involvement of Women

One of the most severe criticisms levied against agricultural and extension educators is their inadequate outreach to women. Pilar López, Solange Anjel and Edward Ruddell (The Opinion of Women About A Rural Development Program In Northern Potosí, Bolivia), and Wanyama and Steele (Participatory Training Programs that Prepare Women to Enter the Mainstream of Extension) discussed the central role of women in agriculture.

In developing countries, Wanyama and Steele show that women farmers produce 70-80% of the domestically consumed food and play a major role in natural resource management. However, in spite of their important contribution, data for Africa indicate that only 7% of extension services are devoted to helping women farmers. Lack of attention to women in extension programs can be traced to the erroneous assumption that men are the main decision-makers and producers in agriculture. This is compounded by the fact that most agricultural extension agents are men. The needs of women farmers should be addressed for agricultural production in developing nations to improve. The authors conclude that to fully integrate women farmers into mainstream extension, extension agents need skills, knowledge and appropriate attitudes on how to plan gender-inclusive programs. Extension agents must be trained to incorporate a gender dimension into extension programs, and integrate women farmers into mainstream extension services.

López, Anjel and Ruddell examined opinions of women about the strengths and weaknesses of a people-centered, farmer-led extension program. The findings revealed that although the women perceived that they were unwelcome at many training events, they learned by looking and listening to what the men were being taught. World Neighbors Andean Area (an NGO) identified a set of policies that could enhance the participation of women in rural development programs. The implementation of these policies requires a change of mentality, attitude and action which the authors feel must begin with the educators. Farmer promoters (leaders) have to become models in the way they treat their wives; as well as have technical expertise.

Remileku Rahey Cole's (Communicating Technology Among Farmers in West Africa: Rice Technology Diffusion Among Women Farmers in The Gambia) presentation is an excellent example of the adverse effects of inadequately serving the female agricultural population. The Gambia, one of the smallest countries in Africa, is facing severe economic problems and food shortages. In The Gambia, rice is the

country's main staple and women are the primary rice growers. In her study, Cole identified ways in which international agricultural and extension educators portray development, and examined the implications of their understanding on identifying and selecting technology programs for rural women farmers. Women in The Gambia, due to past development project failures, have had little faith in the types of technology proposed to them. As a result, they have either paid little attention to the details of schemes introduced to them, or they have accepted them with minimal consideration. This lack of consideration has also led to quick abandonment of innovations.

New Structures for Better Linkages

Paper presenters did not leave us with hopeless-case scenarios. On the contrary, the identified problems served as the backdrop for innovative theoretical models, institutional arrangements, research, training and practice in the field.

The problem of inadequate education of extension staff in Africa was identified in a 1990 FAO study - 56% had secondary education and 32% intermediate education. To make up for this lacuna, Moses Zinnah, Roger Steele, David Mattocks and Deola Naibakelao ([Responsively Reshaping Agricultural Extension Curricula in Universities and Colleges of Sub-Saharan Africa](#)) outlined an agricultural extension revitalization initiative for upgrading the competencies of mid-career agricultural extension staff. Launched in 1993, the initiative assisted universities and colleges in sub-Saharan Africa to become more responsive to the realities of each country's unique agricultural situation. The presenters described the dynamic process of developing undergraduate agricultural extension curricula based on an examination of needs expressed by different stakeholders.

Prior to this, the government-controlled agricultural education curriculum focused exclusively on technical subjects. The new demand-driven curriculum, developed with the participation of universities, agricultural ministry representatives, and non-governmental organizations combined a technological base with a good understanding of the social sciences. Workshops facilitated a dialogue among all stakeholders incorporating their knowledge, competencies, and experiences. The initiative also assisted in developing partnerships among organizations working in the agricultural sector. These partnerships were vital for resource mobilization (both human and financial) and the sustainability of such a demand-driven program.

One unique and important element was the off-campus practical learning component of the program. Field-based programs were intended to narrow the gap between theory and practice of each student. These Supervised Experience Projects (SEPs) were designed to (a) immerse students in valuable farmer-focused, experience-based learning activities, (b) reduce the discrepancy between the competency level and task performance of extension staff in their real work environment, and (c) avoid training becoming theoretical. The students' ability to detect errors or problems and to explore practical ways and means of correcting them was the essence of the SEPs.

Effective extension education curricula should emphasize learning as self-directed, creative, expressive, on-line, continual, and reflexive. The emphasis should be to overcome passivity, helping learners give meaning to all aspects and components of propositional and practical learning.

The initiative emphasized holism in the process of developing responsive students (participants in the course), the university, the users of the graduates (ministry of agriculture, NGOs, farmers) and other interest groups as a community of learners and stakeholders.

William Rivera (One Fourth of China on the Road to Unsustainability: Agriculture and Natural Resources in the Northwest) painted a bleak picture of Northwest China's ability to continue to feed the people of China. Both institutional and physical environments form a significant constraint on any effort at sustainable agricultural development. What appears to be needed is the development of innovative institutional arrangements. Rivera pointed to a need for a long-term development orientation and action plan that comprehensively envisages (a) rational land-use planning, (b) a shift of agricultural research toward sustainable agrotechnology, (c) the institutional reform of agricultural support systems evaluated by experts external to the institutions (e.g., agricultural research, extension and education), and (d) institutional strategies toward more sustainable soil fertility management and better management of water resources. He also called for a coordinated mix of government and private enterprise development, including enterprises relating to agriculture, industry, and services that would greatly contribute to rural advancement.

Extension in the Caribbean is being faced with new challenges brought about by liberation of the world economy. In responding to these new challenges, extension must put in place more efficient systems. Dunstan Campbell (Joint Focused Programming for Enhanced Information Delivery) described a collaborative response by the Governments of the Eastern Caribbean States, the University of the West Indies, the Mid-West Universities Consortium for International Activities, and the Caribbean Agricultural Research and Development Institute. This effort, called Joint Focused Programming, replaced the separate programs of each entity with an integrated institutional arrangement that allowed a focused approach throughout the region. Although the shift in roles was not easy, Joint Focused Programming proved to be an effective approach in addressing the issue of low impact of extension services, strengthening linkages with research, improving the status of extension workers, and providing information to make agriculture more competitive.

In the United States, Agunga and Kazan's (Extension Communication and Sustainable Agricultural Training Needs of the Innovative Farmers of Ohio) study found that farmers were unhappy with the traditional land-grant approach of taking findings from experiment stations to farmers. Instead, a collaborative approach between farmers and researchers was promoted to generate scientific findings from the farmers' farms. Their study also revealed that over 97% of the Innovative Farmers of Ohio group learned from their peers, implying that extension educators need to understand the importance of interpersonal communication in knowledge-sharing.

Role of Communication in Adoption of Innovations

Agricultural and extension educators appear to be increasingly aware of the important role of communication in adoption of innovations. One indication of this trend is the increased emphasis on participatory models of education and development. Rose Feakpi, Moses Zinnah, Ivy Drafor and Julia Compton (Testing Decision-Making Tools to Help Front-Line Agricultural Extension Staff Advise Ghanaian Farmers on Effective Maize Storage Options) described a participatory extension approach for innovation diffusion called Decision Tree.

In contrast to extension staff serving simply as a conduit for the transfer of technology from researchers to farmers, Decision Tree provides a model by which extension personnel can help farmers to better understand the decision-making process so that they can make appropriate choices from various options in an environment of risk and uncertainty. In this role, extension personnel become facilitators of the adoption of sustainable techniques, enabling farmers to select viable options among multiple recommendations, keeping in view their financial, technical and socio-cultural circumstances.

People's participation is necessary for effective educational programs and for community development. Arlen Etling ([A Case Study in Collaborative Consultation](#)) understands how in times of turbulence and scarce resources, top-down modes of decision making may be acceptable. However, even in these instances, the validity of non-participatory techniques is questionable. FAO's position (Global Consultation, 1990) reinforces this view that, in many countries, the extension service will have to make greater efforts to adopt the participatory extension approach and mobilize farmers' and other community organizations.

The quest for appropriate technology has led many educators to seek more input of local knowledge to develop sustainable farming systems. Farming Systems Research (FSR) uses a systems approach to identify technologies that are appropriate for specific locations and farm situations. David Dominguez and Arlen Etling ([Attitudes Affecting Peruvian Farmers' Choices: The Influence of Selected Factors](#)) reported on a study in which they attempted to better understand decision making of resource-poor farmers in San José de Arizona, Peru. Their research, following a farming systems approach, views the farm as a comprehensive, integrated unit of different, interrelated elements. Field-based research required extensive input from farmers. The researchers gathered and used indigenous knowledge to better understand how farmers use biodiversity for survival, and the aspirations, values and preferences of rural people. The value of indigenous knowledge lies in the collective, socially constructed knowledge of what, how, and why of locally adapted crops. Their model for eliciting farmer input offers potential for two-way communication in development intervention policies.

J. Gowland Mwangi ([Extension Education: A Prime Mover in the Development of Agroforestry](#)) emphasized the important role of effective extension communication principles. Using Kenyan farmers' need to adopt improved agroforestry technologies, he argues for extension education to be an intentional effort, carefully designed to fulfill certain needs. Good extension communication principles emphasize a two-way communication between farmers and change agents, focus on farmers' practices and priorities, consider gender and land tenure issues, and enable a change agent to have deeper understanding of how farmers make decisions related to farming activities and the utilization and marketing of farm products. Good communication may also help in community mobilization for increased participation during the identification, planning, implementation and evaluation of development projects.

Gustav Düvel ([The Identification of Communication Messages in the Promotion of Agricultural Development](#)) took the position that purposeful communication is the essence of development intervention and agricultural extension, showing how the concept can influence the management or adoption behavior of land users in South Africa. He proposed a model of communication based on Kurt Lewin and E. C. Tolman's psychological model focused on intervening or mediating variables assumed to represent the forces directly responsible for adoption behavior. The model provides a useful method for identifying messages appropriate for the systematic promotion of change programs, and may be used for designing and constructing the complete communication program. The uniqueness of this model is that it focuses on the message content in development programs in contrast to other communication models which focus on extension methods and techniques.

Promises and Constraints of Communication Technology

Dale Layfield, Naana Nti, and Rama Radhakrishna ([Communication Technologies for International Agricultural and Extension Education](#)) identified challenges and opportunities offered by new communication technologies. Instant worldwide communication has brought a rapidly changing knowledge base. New electronic delivery methods are altering the way Cooperative Extension and outreach systems are operating. The virtual on-line university will connect faculty and students from universities around the world.

Educators are encouraged to look beyond challenges and consider the opportunities of distance education technologies and methodologies. Agricultural and extension educators with international interests will be able to deliver programs to broader audiences, including learners of all ages and diverse backgrounds. Potential exists for partnerships and collaborative efforts with agricultural extension services worldwide. In addition, international agricultural and extension educators can collaborate with donor agencies, NGOs and other organizations engaged in international agricultural development.

Layfield, Nti and Radhakrishna point to some of the obstacles to effective use of communication technologies. In a 1995 study, they found that lack of time, a formalized reward system for faculty, technical support, and proper design facilities were all likely to inhibit greater use of these technologies. Agricultural teaching faculty who were involved in the study were most negative about their ability to produce instructional materials, and to use appropriate teaching methodologies for distance education. They also felt that they lacked competence in the use of the electronic technology of distance education, as well as in their ability to use appropriate teaching methodologies with this medium of instruction. They also had limited access to training and assistance regarding electronic teaching and communications.

The authors concluded that use of a combination of several communication technologies, from the simplest to the most complex, can provide the benefits of flexibility, low cost, pedagogical effectiveness and robustness. To attain high quality communication technologies, one must invest a substantial amount of time in course design and training, delivery and costs. If these criteria are met, then communication technologies can be cost-effective and efficient.

In another study, Nti, Layfield, and Radhakrishna (Linking Learners with Communication Technologies: What International Agricultural and Extension Educators Can Do) focused specifically on the benefits and challenges of telecommunication technologies in international settings. They concluded that for international agricultural educators to gain full benefit of communications technology, the technology has to be accessible to them and compatible at all sites, and learners have to be adequately trained to use it. In addition, educators have to adopt strategies to ensure that the instruction is appropriate and beneficial to all sites, and that learners from all sites are included in class discussions. Educators should consider socio-cultural and institutional factors, and the availability of financial, technical and human resources in developing and delivering educational programs to learners at different sites, especially in international situations.

The above studies reported on work within educational institutions. Other presentations discussed promises and constraints of communication technology in the field. In many countries, more complex technologies or those requiring extensive support infrastructure are not viable. However, television, radio and video are being effectively used world-wide.

Lighari (Communications Technology and Agricultural Extension in Pakistan) found that the level of communications technology used in agricultural extension programs in Pakistan is limited. Telephone, radio and educational television programs are the most appropriate technologies for effective communication with farmers. He noted that the information burden on farmers will only increase as agriculture becomes more commercialized and sustainability issues come to the fore. As small farmers may find it expensive to acquire knowledge, Lighari offers an interesting insight on the importance of public extension in making the distribution of knowledge more equitable.

In their study of the impact of information on people's perception of La Primavera Forest, Ana Ramirez Carr and Eric Abbott (Communication Channels Preferred by Rural and Urban Audiences for

Conservation Information about La Primavera Forest, Mexico: Implications for Extension Services)

concluded that farmers and city residents do learn about conservation information issues from the media. Results showed that, although expensive, television must be used because it now reaches many important audience members who used to rely on the radio. In addition, while interpersonal sources and newspapers continue to be very important sources for specific environmental information, audiences rate television and radio highest in terms of their adequacy or desirability for future environmental communication. By knowing local farmers' characteristics it is feasible to tailor communication messages for specific audiences. Media messages could be tailored to both the specific media and perceived problems.

Burt Swanson (The Changing Role of Extension in Technology Transfer) depicted the big picture of how technology can transform extension's role in innovation diffusion for both developed and developing countries. He speaks of the technological promise of the next decade - system-based, sustainable, knowledge-based and precision farming technologies - and envisions a realignment of extension's approach to technology transfer, including clientele, programs, staffing and new institutional partnerships.

The work reported herein is a summary of efforts worldwide to answer some of the difficult questions with which we began this synthesis. The issues raised by these questions and the answers to them may perhaps be found in the machines and processes of communication technology, but the true meaning and the full realization of that technology can only come from some nebulous development spirit. It is that spirit of wanting to improve the lives of world citizens that continues to push agricultural and extension educators to the cutting edge with care.

Innovation and Risk: Synopsis of Poster Presentations

The poster session was an important contribution to this year's conference attracting a great deal of interest from participants.

How innovative uses of electronic communication technology, participation in experiential learning activities, and developing cultural understanding enhance people's learning and practical application were major themes running through the poster presentations. A total of twelve posters, the largest number at an annual conference so far, were displayed and explained by authors. The posters reflected the presenters' research activities and/or personal experience and observation.

Communication Technology in the Classroom, the Organization and the World

From the standpoint of classroom instruction, Michael Newman, Matt Raven and Tina Day ([The Effects of World Wide Web Instruction and Learning Styles on Student Achievement and Attitudes](#), Mississippi State University) showed how the web had been used in classroom teaching in the Department of Agricultural and Extension Education, and what impact the use of the web had had on learning.

Faculty and students alike designed web pages to support instruction based on two premises. Because students are expected to use the web to undertake different course activities they would become better users of technology, thus preparing themselves to be successful in an information-based society. Secondly, by using technology to deliver information, instructors have more class time to engage students in solving problems, thereby increasing learning and retention of subject matter.

In terms of learning impact, Newman, Raven and Day's research showed that students in the web-supported instruction group improved their attitudes toward instruction and achieved higher levels of writing and Internet proficiency than the traditional classroom-instruction group. These and other significant benefits to be gained from web-based instruction are important considerations for faculty who are thinking of using the web as an instructional tool in the university setting.

From an organizational perspective, Karl Prentner ([Bringing Computer Technologies to Extension: Linking Us to the World](#), Ohio State University) built on the idea that communication technology is flexible and adaptable to meet unique organizational needs, and showed how the Ohio State University's Northeast Extension District reached the goal of becoming an effective and efficient communications unit in the OSU Extension Service, and enhanced the computer capabilities of its county faculty and staff. The district decentralized clerical, communications, research, and training using tools provided by the extension service, the Internet's access to research resources, and e-mail and video-conferencing telecommunication. Skills learned by faculty and staff as a result of this experience led to better research, computerized ways of communicating the results of their endeavors, and provided state-of-the-art resources to communities. Communities also became more aware of the district extension unit's resources through its news and mass media materials.

The use of communication technology outside and beyond the classroom, indeed worldwide, in linking adult learners was demonstrated by Mazanah Muhamad and Othman Omar ([Beyond the Classroom: Communication Technology Linking the Adult Malaysian Learners](#), Universiti Pertanian Malaysia). They described Malaysia's continuing transformation from a natural resource-based economy to a manufacturing-industrialized economy, the demand this was placing on higher and continuing education, and how access to learning was the key to organizational adaptation, marketable employees and national competitiveness. In this setting, Muhamad and Omar stressed the potential of telecommunication

technology in both the private and public sector, and documented current initiatives in Malaysia to develop digital media integration, computers and communication, and a superhighway infrastructure for the use of electronic media; how institutions are promoting learning through cyberspace technology; and the ways in which learner-centered adult education is being focused on use of interactive multimedia.

Experiential Learning

Experiential learning to provide practical, real-life experiences in support of classroom instruction of students was the focus of two posters.

“What in the World is Going On”, a poster by Kathleen Jones (Lower Dauphin Middle School), highlighted the need for more global awareness on the part of North American youth. Jones provided 20 experiential learning activities for middle and high school youth to gain a global perspective of agriculture and agriculture-related subjects. The activities, which were field tested before actual use in the classes, used a multidisciplinary approach to provide insight into conditions practically impossible for students to experience in the traditional curriculum. The activities also included simulations and research projects that led into role playing events highlighting interdependencies among nations.

David Dominguez, David McCormick and Thomas Bruening’s poster presentation entitled “Experiential International Agriculture” outlined the international component of a class on problem solving in tropical agriculture at Penn State University. This experience-based class is founded on the philosophical belief that learners’ personal involvement in a specific experience will enable them to use the knowledge gained to guide their decisions and actions. The poster described how students first were engaged in formal lectures, fieldwork, and personal interactions with farmers in Pennsylvania, and then traveled to Puerto Rico to learn how to deal with situations in a different technological and cultural setting. In both the US and Puerto Rico, students experienced first hand the complexities of problem identification and resolution. After completion of the course, students indicated that they gained increased understanding of the diversity of problems in international agriculture, and a better appreciation of respective cultures and cultural differences.

Real World Experiences in Cultural Understanding

The value of real world experiences in enhancing cross-cultural understanding among students and practitioners was depicted in four posters.

Julie Tritz and David Acker ([The ISU/SAU Exchange Program: The Student Impact](#), Iowa State University), showed how a three-year commitment by Iowa State University and Slovak Agricultural University to provide real world and cross-cultural sensitivity learning experiences had benefited 25 students from these universities to foster a better understanding not just of technical agriculture but how people in other parts of the world live and develop value systems which help them lead a fuller and more satisfying community life. By participating in these experiences, students enhanced their professional career, gained self-confidence, and developed a world view that would be the envy of other students.

The need and value of these kinds of early real world experiences to show to students how local knowledge and cultural differences have an impact on the success or failure of technology transfer was corroborated by Mark Erbaugh’s poster presentation, “Participatory Integrated Pest Management in sub-Saharan Africa: Merging Local and Scientific Knowledge Systems” from Ohio State University. Erbaugh depicted how institutional constraints and poor understanding of farmers’ socioeconomic conditions impeded the success of integrated pest management programs in sub-Saharan Africa, particularly on small and semi-subsistence farms. A systems approach taking into account constraints

and building upon and merging farmer, extension, and researcher-based knowledge in addressing these constraints and working toward IPM objectives in a participatory manner was shown to be vital to the success of the IPM's Collaborative Research Support Project. Four types of participatory activities were conducted in collaboration with local agricultural institutions and non-governmental organizations. These included a participatory appraisal of crop and pest priorities, a farmer implemented crop pest monitoring system, selection of prototype technologies for on-farm trials, and farmer evaluation of the on-farm trials. A unique feature of this approach was the training and involvement of farmers' associations to gather on-site data. Observed benefits of participatory appraisal with farmer involvement were a better understanding of the farmer's situation, what farmers perceive are priority crops, and what constraints they face, and which pests previously unrecognized are important.

Two posters - Arnold Parapi and Roger Steele ([In Search of a Philosophy of Agricultural Education for Papua New Guinea](#)) and Julie Tritz and Robert Martin ([The Women of Uzbekistan: Linking Agriculture, Culture and Education](#), Iowa State University) - also underscored the need and importance of cultural understanding to develop philosophies of agricultural education relevant to different situations.

Poster presentations gave conference participants a glimpse of innovative ideas at work around the world. Innovation always carries risk. But it is clear from the experiences documented by presenters that the risks being taken are bringing about positive change in our classrooms, organizations and institutions, and in government policies.

Writing and Reviewing Workshop

For the past several years, the editorial board of the Journal had thought about organizing a training activity for conference participants to revisit basic principles of professional writing and reviewing for scientific journals. It was hoped that this would also encourage members to write and serve as reviewers for our own Journal. The idea became reality this year, and the positive response from participants encourages the board to provide similar opportunities in the future. Essentially this year's workshop used a presentation format. It is hoped to incorporate practice and hands-on work at future sessions.

Included in this record of the workshop are (a) a presentation by Larry Miller on principles of professional writing, (b) a three-character role play dialogue on writing for professional publications performed by graduate students, (c) comments by two of our Journal's reviewers, and (d) suggestions for reviewing a manuscript from a workshop presentation found on the Internet.

PRINCIPLES OF PROFESSIONAL WRITING

Dr. Larry Miller, Professor of Agricultural Education, The Ohio State University

Miller couched his presentation on professional writing in the context of the basic question of the role of scholarship in our profession. He asked us to consider: "What is our scholarship?" "Are we a discipline?" "Are we a professional group of people, a group of people with a common knowledge base, and a unique vocabulary?" He reminded us that scholarship comes in different forms - the scholarship of discovery through research, scholarship of application, and scholarship of integration of research and application. The label of scholar he emphasized is an earned distinction. It is important for us as a profession of agricultural and extension educators to be judged as scholars in our field; that we be viewed as people who can make scientific contributions in our field whether that science is historical science, philosophical science or critical science.

The most important question to ask ourselves when we aspire to publish is what Miller called the "so what?" question. When we, as potential authors, look at a study or an article we need to ask, "What good does this article contribute?" We must be able to show the profession why this information we are sharing is an important piece of work. Once we've answered those questions, we are ready to follow the criteria for professional publication.

Although Miller focused on the preparation of quantitative research articles, many of the principles hold true for other kinds of research articles as well.

One of the first things to do in preparing a research article is to become familiar with the style manual used by the journal in which one wishes to publish. Peruse the journal's manuscript submission guidelines and conform to its specifications. Studying recent issues of the journal will also provide understanding of how materials should appear. Note also the style of writing. For example, some journals want all content written in the past tense, in active voice, or with no personal pronouns.

Use peers and colleagues as internal referees prior to submission. They can provide just as good a critique as the journal referees.

The components of a research article and their specific meanings were presented to the group:

1. Introduction
 - a. State the need--why does this study need to be done.
 - b. The Problem Statement
2. Methodology
 - a. Research Design--Communicate to researchers all over the world what you're doing. Your design opens a window on your study and enables others to make judgments about whether or not to believe your results.
 - b. Population and Sample--Describe your population, sample, and sampling procedure.
 - c. Instrumentation--How are you going to measure your results? Make a statement of reliability and validity.
 - d. Treatment--Describe the variables thoroughly.
 - e. Conditions of testing--Under what conditions did you collect the data?
 - f. Data Analysis--How did you analyze your data?
3. Results (Findings)

The hard part here is giving the right amount of information. Often too much unrelated information is included.
4. Summary
(Can also be called Recommendations, Discussion, Interpretation, Conclusions and/or Implications)
 - a. Relate to results
 - b. Relate to results of others--Where and how did you add to the current knowledge base with your new knowledge?
 - c. Include need for further study

Miller concluded that if as a profession we have a body of scholarship worth sharing, then we have a moral obligation to accumulate that knowledge and share it so that others understand our theories and our science.

ROLE PLAY DIALOGUE: WRITING FOR PROFESSIONAL PUBLICATION

Adapted from: Van Til, W. (1986). Writing for professional publication. (2nd. ed.). Boston: Allyn and Bacon, Inc.

Cast of Characters

Charlie: A newly appointed assistant professor

Bill: An experienced professor with many publications

Mary: Editor of a scholarly journal

Setting

An office that resembles thousands of offices of professors across the country--filing cabinets, computer, shelves crowded with books, desk, and barely enough room for the three to sit comfortably. We join them mid-conversation...

Charlie: But why should a person write for professional publication anyway? Take me, for instance. I breathed a deep sigh of relief after I completed my doctoral dissertation. Now I'm just beginning to get used to students calling me professor instead of Charlie. I like the college--even though they don't pay me what I immodestly know I'm really worth. I enjoy my students, at least most of them and I get along all right with the faculty. The dean does her thing and I do mine and we don't bother each other. I like my lifestyle. Why should a person write?

Bill: I guess everyone would give you different reasons, Charlie. You'll have to decide what motivates you, but a major reason why some of us write is to communicate with a wider audience than we can reach with our voices. We think we've got something to say, something that's worth hearing, and we want to put it down in writing and share it with other people. Somewhere along the way we've tried or experienced or thought or found out something that we want to communicate to others. Communication is a real urge, we want to make ourselves heard, we want to make a difference.

Charlie: Sounds pretty noble! Any less noble reasons to write for professional publication?

Mary: How about recognition? In professional work, writers are usually recognized by their colleagues and admired. Not all may agree with the views expressed, but none can deny that here is a person willing to enter into professional discussion, to express views and report findings, to stand up and be counted. When a profession looks for leaders, it turns to its writers. How else do you learn about others in the field save through their writing?

Bill: And that's not the only kind of recognition. Don't underestimate the potential of financial rewards for professional writing. Personnel decisions count heavily on publications.

Charlie: The old "publish-or-perish" syndrome.

Mary: The dreaded "publish-or-perish" is real. But I view it as negative only when it requires **every** professor and administrator to publish scholarly work regularly. Forcing all university staff members into the same mold ignores those with different strengths. Publish-or-perish policies which deny individuality too often lead to mediocrity. Under the pressure of publish-or-perish, what is apt to perish is high-quality publication.

Bill: All the more reason to return to the reason that I write, and that is that the most deeply satisfying reason for professional publication is to communicate, to attempt to make a difference in this imperiled world through sharing the best of your insights with others.

Charlie: Well, I know that your words should inspire, but at the same time they elicit a bit of panic. Since writing one's ideas has a way of making the ideas permanent, I'm a bit spooked about publishing.

Mary: You're not alone. Cold print is permanent, errors and omissions do occur, and writers often have second thoughts. Console yourself knowing that nobody is perfect. So, check your data, develop your manuscript to the best of your ability, read the revisions with care, and stop worrying.

Charlie: O. K. , I'm convinced. I want to submit a manuscript. Any words of wisdom?

Bill: Mary can answer from an editor's perspective, but as a manuscript reviewer for several journals I would like to offer what I look for in a manuscript. Imagine your audience. In a scholarly journal, your readers are specialists. Talk their language, but don't lapse into pretentious jargon. Be sure that you are writing clearly, crisply and comprehensively for your fellow specialists. If they can't understand you, there is something wrong.

Charlie: So, what frequently goes wrong in communicating with specialists through scholarly journals?

Mary: I'll answer that one, even if I generalize. Sometimes the purpose of the article is unclear. One can read on and on, yet never learn what the researcher had in mind. You know, I really rely on the abstract to give me an instant picture of the manuscript. Reviewers usually read the abstract first as well, so it's important that the abstract is carefully written, stating objectives, scope, methodology, results and principal conclusions. All that in 250 words or less!

Bill: Sometimes important information is left out. The author makes the assumption that readers already know certain facts about which they are actually uninformed. Also, be careful with generalizations and avoid oversimplified conclusions. If you really want to communicate, take the space for illustrations and examples. Use freely that blessed phrase, "for instance."

Mary: Vagueness really irritates me. If a word used in the field has several meanings, make plain the meaning intended. Don't use an elaborate word when a simple one will do. Sometimes the conclusions are buried in the body of the article. Or the scope of the article is so wide that the context wanders aimlessly. Occasionally summarize as you go along, rather than save all summary for final paragraphs.

Charlie: You mentioned reviewers. One reason I haven't submitted a manuscript is the feeling that, "It takes so long, why bother?" Is it the review process that delays publication?

Mary : I'll admit that refereeing takes up a good deal of staff and clerical time. It's expensive too. Nevertheless, refereeing gives the scholarly community assurance that peers have reviewed the article and judged it to be worth publication. Referees often point out errors or suggest additional sources. At times they call for better documentation. They help editors make sound decisions. After all, journal editors can't be familiar with all aspects of a broad field or its many specializations.

Bill: Most manuscripts are neither immediately accepted nor rejected. Authors receive suggestions for modifications from both editors and referees. Modifications take time, but you probably have a better article when the modifications are made.

Charlie: I've heard some horror stories about referees. I'm quite aware that somebody has to judge a manuscript and determine whether it's publishable--that's inevitable. And the more folks, probably the better. However, referees differ in philosophy and ideology. Political factors may affect their judgments. They may disagree with the manuscript and each other. As an author, I feel a bit helpless.

Bill: Yeah, I guess anonymity complicates the process. The reviewers are not told who the author is, and the author is not told who the reviewers are. Only the omniscient editor knows.

Mary: Well, yes, but anonymity is in the interest of objectivity. A reviewer might be influenced by an author's reputation or lack of one. An author might develop intense disliking for a critic. A reviewer might pull punches unless guaranteed that the reviewer's identity will be withheld from the author. Anonymity also reduces possible editorial discrimination.

Bill: You know, if you feel someone may have criticized unjustly, you can have further correspondence with the editor in defense of your view.

Mary: I like to think of the author and editor as partners. Each should respect the other's expertise. Each should strive for the best possible product. Editors are more than comma-catchers for authors. A good editor makes a contribution to content. The editor-author relationship should be a collaborative arrangement and a healthy partnership. About the editor-reviewer connection, editors rely on the feedback of the outside reviewers, and therefore should select referees who are not only experts but also without known biases against a field or a methodology. For example, I never send a manuscript using qualitative research methodology to a reviewer who I know is neither sympathetic to the method nor competent to review qualitative research.

Bill: I suspect that after you've read a number of reviews, as editor you're able to figure out the grounds on which negative reviews are based.

Mary: Sure. I take into account the reviewer's vested interest or bias. If other reviewers are favorable, and I use at least 3, sometimes 4 outside readers per manuscript, and if my gut reaction is positive, I'll accept the manuscript. Frequently it does come down to a judgment call.

Charlie: Let's get back to a more cheerful topic, acceptances. After acceptance of an article, from an editor's point of view, what's a good relationship with an author?

Mary: The best relationships are with authors whose on-time manuscripts are readable, accurate, carefully proofread by the writer, and consistent with our style guide. We appreciate authors who take into account outside reviewers' suggestions and who are willing to change their manuscripts accordingly. Or, at least, willing to discuss with us the suggestions they reject. Our major problems are with authors who write clumsily, are shaky on facts, and careless about typos. My work is much harder if authors ignore our APA style guidelines. Procrastination in delivery of a revised manuscript is another major frustration.

Bill: From the writers' point of view, a major grievance is the time lapse between acceptance and publication. Or no word for what seems like forever. After thinking about what we've said here today, seems like good communication and commitment on the part of authors, reviewers and editors is crucial to the successful partnership.

Charlie: Well, this has been helpful. I think rather than go to lunch with you two, I'm heading back to the office to work on a manuscript for publication.

JIAEE REVIEWERS' COMMENTS

At this point in the workshop we requested comments from some of our experienced reviewers as to what they look for in a paper. We share their comments with you now.

Dr. Don Meaders, Professor Emeritus, Michigan State University

There are three general areas which I want to use for discussion: conformity to standard style, logical flow of thoughts, and definitions of terms.

Conformity to style

Authors, do your homework, especially in regard to title and style of tables. A detailed title is important because the title given to the table should tell the reader the general scope and nature of the data included. A first draft of a manuscript is not appropriate to send to an editor.

Logical flow of thoughts

The logical flow of thoughts throughout the paper is important so as to help the reader grasp the full meaning of the ideas in the paper. I have no simple guide for you to follow. As you write, think about the reader. What do you want her/him to know? Do you have a particular idea which is most important for the reader to grasp to understand why and when you did the research? When you are writing, consider whether or not you have already told the reader what needs to be told to follow your thoughts now.

Definitions of terms

Perhaps one of the most troublesome areas is the use of terms, and meanings which you ascribe to them. We have no commonly accepted meaning for "agricultural education", for "extension." The reader should be able to get your meaning from the context of the terms. For example, if you use the term "agriculture", are you including livestock and horticulture? Not all people in all parts of the world include this broad meaning which many American writers use.

Dr. Arlen Etling, Professor of Agricultural Education, Pennsylvania State University

Reviewing for the Journal is both an opportunity and a responsibility. Reviewers can gain skills and perspective from this experience. They also accept some important responsibilities when they commit to review articles. The most important responsibility, in my opinion, is to promptly review and return the article. Delays affect the quality of the Journal and discriminate against the writers. Two weeks should be enough time to review any article.

Reviewers should seek feedback on their reviews. As a writer, I am amazed at some of the inappropriate comments that some reviewers make. Such comments are counterproductive to an effective, high-quality Journal. We reviewers need to seek feedback from the editor and from colleagues on an individual basis.

Reviewers should use criteria appropriate to the article. If this is a philosophical article or a case study, do not disqualify the article because "the research methodology is weak."

Look at your role as one of "helping" the Journal. Some reviewers try to be so rigorous that they become roadblocks to a reasonable review process. Use common sense in following the review criteria. The role of the reviewer is not to "show off" his/her academic rigor. It is to help the Journal be the best periodical possible. Be constructive. If the article being reviewed is hopeless, then say so. If the article has possibilities then make critical comments constructive and specific so that the author knows exactly why the reviewer is concerned and how to fix the problem. Review the article based on the author's purpose, not on some alternative purpose or perspective that you, the reviewer, would have preferred.

REVIEWING A MANUSCRIPT FOR PUBLICATION

Allen S. Lee, Faculty of Management, Montreal, Canada

In preparation for the workshop, we found on the Internet a very helpful and user-friendly review guide. The guide was presented at a meeting of the Decision Sciences Institute in Miami Beach, Florida, November 22, 1991. Allen Lee, the author, was kind enough to allow us to use his work during the workshop with appropriate acknowledgment. A full transcript of the presentation is available at: <http://www.management.mcgill.ca/homepage/leean/index.htm>. It is also published as an invited note in The Journal of Operations Management, Volume 13, Number 1 (July 1995), pp. 87-92.

Actions suggested by the author in reviewing a manuscript are:

1. Start out with your own summary of the manuscript.
2. Let the editor and author know what your expertise does, and does not cover.
3. Give "action-able" advice.
4. Convince the authors by arguing from their own assumptions and framework.
5. Provide both (a) your general, overall reaction, and (b) a list of specific, numbered point-by-point comments.
6. List the manuscript's strengths.
7. Quote, give the page number, or otherwise explicitly locate the parts of the manuscript to which you are referring.
8. Offer comments on tables, figures, and diagrams.
9. Be kind.
10. Be frank, in a tactful way, about your own emotional reaction.
11. Do some of your own library research.
12. If rejecting the manuscript, suggest what future research efforts might examine.
13. If recommending a revision, spell out alternative scenarios for how the revision could be done.
14. Provide citations or a bibliography.
15. Date your review.

Benefits to be gained from reviewing were also interesting.

Benefits to the reviewer in the short run: Doing a review confers an insider's view of the reviewing process. The reactions of the other reviewers and the editor all contain potential lessons for one's own manuscripts to be submitted for publication.

Benefits to the reviewer in the long run: Good reviews can benefit one's career. A track record of good reviews will enhance one's reputation with editors, who may then serve as job contacts or outside reviewers in one's tenure, promotion and reappointment process.

Benefits to others: Numerous people have helped me in my career as university teacher and researcher. When they ask me to review a manuscript for which they are the editor, I regard their request as an

opportunity for me to return some of the help they have given me. In our research culture, doing a review of a manuscript is a socially significant gesture.

Benefits to one's own school of thought: As an author, I often have the experience in which reviewers, hostile to and ignorant of the research traditions that I embrace, misreview my submission. Therefore, whenever I find that I am a reviewer for a submission that falls in my own school of thought, I expend extra efforts to give it a careful, constructive review. As a result, the editor would, if necessary, have some "ammunition" with which to neutralize any hostile and ignorant review, and thereby to justify a positive editorial decision on this submission.

AIAEE Program Goals for 1997-98

The annual program of activities of the Association is planned at the conference by nine different committees. Committee chairs may serve from a few to several years. They are assisted in committee work by conference participants who volunteer service based on interest and talent. This kind of structure and working procedure is practical and utilitarian, and helps generate and sustain interest and interaction among members at the conference and all through the year till next year's conference.

Time is set aside during the conference for committees to meet, plan, and present their plans to the general membership for information. The Association's leadership team, which includes chairs of the several committees, reviews and approves the plans, and incorporates them into the published program of activities of the Association.

A synopsis of the 1997-98 program goals is presented below as defined by each committee.

Conference Planning: Jack Elliot, Jan Henderson (co-chairs)

1. Organize the 1998 conference in Tucson, Arizona and the 1999 conference in Trinidad, University of the West Indies.

Conference themes are:

1998: Participatory Collaboration for a Sustainable Environment

1999: Revisiting Extension Before the 21st

Publications: Robert Agunga (chair)

1. Produce three issues of the Association's Newsletter "The Informer" to include personality features, viewpoints, reviews, and news. Eight regional editors for US, Africa, South America, the Middle East, and Southeast Asia were nominated.

2. Refine list serve.

3. Refine and expand AIAEE home page to include back issues of the Journal, constitution and bylaws, membership data base, and other features.

4. Update and print AIAEE brochure (with membership committee)

Awards and Recognition: Wade Miller (chair)

1. Recognize achievements of members through the outstanding leadership, service and young professional awards, the best paper and poster presentation awards, a new gratis lifetime membership for retired AIAEE members, and a printed program naming previous and current awardees.

Constitution and Bylaws: Jim Christiansen (chair)

1. Maintain and manage use of the logo.

2. Update constitution and bylaws, distribute and place on AIAEE home page.

3. Help in organizing AIAEE affiliates and chapters, and maintain contact with former students on appropriate association documentation.

Resolutions: William Thuemmel (chair)

1. Audit, solicit, and get approval for new resolutions.

Legislative: David Giltrow, Jim Long (co-chairs)

1. Assist membership in educating organizations and legislators concerning foreign and international trade issues.

2. Inform membership of legislative and policy issues.

Scholarly Activities: John Richardson (chair)

1. Organize conference paper and poster presentations, and publish proceedings.

2. Publish Journal.

Membership: Deirdre Birmingham (chair)

1. Publicize new membership categories.

2. Conduct past members survey.

3. Promote Association in various ways.

4. Organize member data base.

5. Support Association chapters.

6. Print Association brochure in Spanish.

7. Explore credit card payment of member dues.

Graduate Students: Randy Andreasen (chair)

1. Raise funds for presidential scholarships.

2. Increase networking among students.

3. Explore establishment of graduate chapters of Association.

AIAEE Business Report

Significant business of the Association transacted at the conference included election of new officers for 1997-98; changes to the constitution and bylaws adding a new affiliate member category and chapters of the Association, and approving dues for institutional and affiliate members; representation and functioning of the Journal editorial board; approval of resolutions; planning for next year's conference; and promoting and publicizing AIAEE.

New officer election

New officers elected by the general membership of the Association to serve on the AIAEE Board for 1997-98 are:

Jan Henderson, President-elect
Deirdre Birmingham, Secretary
Latif Lighari, Treasurer
John Richardson, Member-at-large
Randy Andreasen, Graduate Students Representative

Constitution and Bylaws Changes, effective July 1, 1997

1. A new category of affiliate membership was approved. Existing categories are regular, honorary and institutional. Affiliate membership will enable organizations and institutions that desire to be associated with the Association but not become directly involved in its business and organization to join. Affiliate members can send representatives to attend and participate in AIAEE conferences, would receive the Newsletter and Journal, and can participate in other related activities. They would not have voting rights. Annual dues are \$55 for developed countries (US, Canada, Australia, Europe, Japan), and \$40 for developing countries (Asia, Africa, Mid-east, South America).

2. Criteria and dues for the institutional member category were approved for inclusion in the bylaws. Institutional membership can be granted to institutions having five or more members belonging to AIAEE. The annual dues for institutional members approved by the general body of the Association are:

a. Institutional member, non-profit institution

Developed country	\$150
Developing country	\$75

b. Institutional member, for-profit institution

Developed country	\$300
Developing country	\$150

Individuals who belong to the institution which is an institutional member of the Association will pay a reduced amount for annual dues while enjoying all membership services and benefits. The annual dues for individuals from an organization that is an institutional member are \$15 for developed countries, and \$7.50 for developing countries.

3. The establishment of AIAEE chapters can encourage the development of Association "mini groups" around the world. Recognizing this potential, the conference approved granting recognition to chapters formed by AIAEE members to further the Association's goals and objectives. AIAEE chapters may be organized wherever a group of AIAEE members desires to develop an AIAEE program for the benefit of its members. Chapters may be organized to represent a selected region, area, or country. Many of these members may never be able to attend an AIAEE conference outside of their region, area, state, or country, but could be active in more localized Association activities and will receive all AIAEE benefits and services.

4. With regard to the Journal, the membership approved a provision that would allow the Journal's editor to serve as an ex-officio member of the executive committee of AIAEE. It was also agreed that membership on the Journal's editorial board should be representative of the regions of the world, and that the editor should select, entertain applications from, and/or receive nominations on behalf of individuals considering their experience and service to the disciplines of agricultural and extension education so that a broad and balanced representation is ensured. Editorial board members would be approved by the executive committee of AIAEE.

Resolutions

Resolutions approved by the membership of the Association:

1. Recognized Barbara Ludwig, President, Jack Elliot, President-elect, and John Richardson, Chair, Scholarly Activities, for their dedicated leadership in planning the 1997 conference, and Jack Elliot, past editor, and Satish Verma, current editor for their dedicated leadership and service to the Journal.
2. Recognized Jim Diamond, Professor Emeritus, Pennsylvania State University, for providing the fermented juices that were so pleasing to the conferees' palates that properly adjusted attitudes to the successful completion of the conference.

Legislation

The AIAEE Legislative Committee suggested to the 1998 conference planners that the impact of the North American Free Trade Agreement (NAFTA) on agricultural policy, especially agricultural and extension education, be considered as a keynote address or a panel topic.

Promoting and publicizing AIAEE

1. It was agreed to publish a Spanish version of the AIAEE brochure to publicize the Association and attract membership from the Spanish-speaking region of this hemisphere. The brochure will be available at next year's conference.
2. The significant and unique role of graduate students in the Association was recognized and applauded. Students raised \$600 from this year's raffle and silent auction for the presidential scholarship fund which helps students to participate in the conference.

Future Conferences

AIAEE members and development educators can look forward to going to Arizona and Trinidad-Tobago for the Association's conferences in 1998 and 1999, respectively.

The 1998 conference will be held April 16-18, at the Hotel Park Plaza, in Tucson, Arizona. The conference theme is "Participatory Collaboration for a Sustainable Environment." Calls for papers and posters for the conference have been sent to members and otherwise publicized. These are also being reproduced in this issue.

The 1999 conference is to be hosted by the University of the West Indies' Department of Agricultural Economics and Extension at the University's St. Augustine campus in the twin islands of Trinidad and Tobago. The dates have not been finalized, but it is expected to be some time in April.

The conference theme "Revisiting Extension before the 21st" will provide an opportunity for participants to reflect on the varieties of extension systems and experiences around the world which have influenced the development of agriculture and rural communities, and engage in dialogue about future direction.

Tentative plans for the conference include a preconference session in Tobago, and the main conference in Trinidad. Tobago is connected by boat and air with Trinidad. The islands' unique issues and problems, their farming systems, and the extension approaches adopted will serve as a visual backdrop and intellectual stimulation for conference delegates who will add to this their mix of interests and experiences.

CALL FOR PAPERS

For the 14th Annual Conference of AIAEE in Tucson, Arizona from 16-18 April, 1998

AIAEE will accept paper proposal summaries related to international agricultural and extension education issues. Topics related to the 1998 conference theme of "*Participatory Collaboration for a Sustainable Environment*" are encouraged, but all submissions will be given full consideration. Both research and philosophically based papers will be considered. The summary should not exceed three double-spaced pages of text. In order to submit a proposal you must be an AIAEE member. Contact Dr. Latif Lighari, AIAEE Treasurer, University of Connecticut, 139 Wolf Den Road, Brooklyn, CT 06234, USA, concerning membership information (Tel: 860-774-9600/Fax: 860-774-9480). Please contact both your professional in-country and international colleagues about the opportunity to submit a proposal. Each proposal requires the following information:

- * Separate title page with names (full contact information, including mailing address, fax number and telephone number of the author responsible for receiving communications from AIAEE. **Email address is highly desirable**). Also, on the title page, please indicate if you are willing for the paper to be considered for participation in the poster session should it not be accepted in the paper session.
- * Introduction
- * Purpose of paper
- * Methods and data sources; or, Theoretical/philosophical themes (the problem or issues, with attention to the arguments used)
- * Results and/or conclusions
- * Educational importance
- * 4 copies of the paper proposal must be included
- * More than one proposal may be included

Deadline for submission of paper proposals is October 1, 1997. Send paper proposals to:

Dr. John Richardson
Department of Agricultural and Extension Education
Box 7607
NC State University
Raleigh, NC 27695-7607
Tel: 919-515-2380/Fax: 919-515-1965
Email: jgrichar@amaroq.ces.ncsu.edu

Each paper proposal will be peer reviewed by three respected agricultural and extension education scholars. Corresponding authors of paper proposals will be notified in December 1997, and paper specifications given to those accepted for presentation. Presenters will be required to register for and pay the conference registration charge.

CALL FOR POSTERS

For the 14th Annual Conference of AIAEE in Tucson, Arizona from 16-18 April, 1998

The Association for International Agricultural and Extension Education announces a call for posters for the 14th Annual Conference in Tucson, Arizona from April 16-18, 1998. AIAEE will accept poster proposals related to international agriculture and extension education issues. Topics related to the 1998 conference theme of "*Participatory Collaboration for a Sustainable Environment*" are encouraged, but all submissions will be given full consideration. To submit a poster proposal, you must be an AIAEE member. Each poster proposal requires the following information: separate title page with author(s). Include addresses, telephone and FAX numbers, and e-mail addresses, and a two-page abstract giving introduction; purpose of poster; presentation planned; if part of research project, methods, data, and results and conclusions; major points or information to be shared; educational importance.

Awards will be given to the top three posters. Criteria and points used to judge the selection of outstanding posters will be:

Technical content/information	20
Originality/innovativeness	20
Creativity of presentation/ideas	15
Conveys message/easily understood	15
Topic of importance	15
General appearance well planned/good design	5
Easily read	5
Neat and well constructed	<u>5</u>
TOTAL	100

Deadline for submission of poster proposals is October 1, 1997. Send three (3) copies of the proposal to: Dr. John R. Crunkilton, Associate Dean and Director of Agricultural Technology, 1060 Litton Reaves Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0334. Tel. (540) 231-6503, FAX (540) 231-6741, e-mail jcrunkil@vt.edu. For more information, contact Dr. Crunkilton.

Award-winning Papers

THE COLLEGIATE INTERNATIONAL EXPERIENCE: CRITERIA FOR SUCCESSFUL EXPERIENCE ABROAD PROGRAMS

Julie A. Tritz, Graduate Student
Robert A. Martin, Associate Professor
Iowa State University
Agricultural Education and Studies
Curtiss Hall
Ames, Iowa 50011
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(515) 294-0530 (fax)
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drmartin@iastate.edu

Outstanding Graduate Research Presentation

This paper is the outstanding graduate research paper from the Thirteenth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., April 4-6, 1997.

Abstract

Study abroad programs and other international experiences provide the means to enrich the collegiate curriculum and develop the whole person approach to education. The outcomes of an educational experience in an international setting are highly dependent upon the extent to which the participant in the experience has been prepared for it. This article identifies and explains a set of ten criteria for successful involvement in international experience programs. Successful study abroad programs do not just happen. To get the most out of these experiences participants must be goal oriented, focused, resourceful, management oriented, culturally wise, perceptive, and ready for new experiences as well as capable of developing an international mind-set. An international experience is a worthy educational tool. However, it must be approached with a clear set of criteria to judge its potential value.

In 1982, a plea for world peace was made by eleven-year-old Samantha Smith in a letter to Soviet Union leader Yuri Andropov. That letter earned her a trip to the Soviet Union and an opportunity to better understand Russia and other related cultures. Unfortunately, her life was tragically taken away in a plane crash just three years later. In her memory, the Samantha Smith Memorial Exchange Program was established, to increase mutual understanding between young people and undergraduate students of the United States, countries of Eastern Europe and the Soviet Union through educational and cultural exchanges (Gelb,

1990). Such exchange programs and others have helped numerous students gain an international perspective that could not have been taught in the classroom.

An international experience abroad is a part of the international education many institutions and universities both domestically and internationally are trying to administer. International education is defined as a variety of activities and programs designed to encourage the flow of ideas and people across cultural and geographic boundaries (Mitzel, Best & Rabinowitz, 1982). The central goal of

international education is the ability to produce graduates with perspectives that are global in scope (Pickert, 1992). Studying abroad is one facet of an international education.

Purpose

The purpose of this paper is to present a philosophical explanation of the importance of an international experience for students at the collegiate level, and to identify criteria for successful experience abroad programs.

The Criteria

Studying abroad is a phenomenon that comes over a person and changes that person forever. A country, its people, and its culture all have an

amazing effect on any one who has studied abroad. Perceptions are changed, thoughts challenged, and most important, a more worldly perspective is garnered. An international experience provides cultural awareness, improves communication abilities, and increases foreign language skills (Opper, Teichler & Carlson, 1990).

Despite all that is learned while abroad, problems do arise; that is why it is crucial to have a clear understanding of what might happen in an international experience program. Table 1 is a summary of ten criteria that were derived from the literature and the authors' experience, and are considered necessary for a successful study abroad experience. Each criterion is then discussed.

Table 1

Criteria for successful study abroad programs.

Criterion	Importance
1. Set Goals	Realize your abilities, time-frame and set goals for what you want to accomplish.
2. Expectations	Be aware of your home and host university's expectations.
3. Focus Academic Pursuits	A much richer experience will be gained if your interests are focused.
4. Resources/Contacts	Take advantage of the resources both while in your home and host country.
5. Financial Management	Learn to budget; money matters when you're away for an extended period of time.
6. Culture Preparation	Learn customs and the dos and don'ts of the country you're traveling to.
7. Identify Perceptions	Realize how you may be perceived and check your own perceptions of the host country.
8. Language Training	If you're not fluent, learn some language. A working vocabulary is extremely helpful.
9. Communications	Realize we all communicate differently and that open communication is essential; both talking and listening.
10. An Open Mind	A positive attitude will only enhance your experience. Flexibility is key!

Set Goals

Goal setting is a powerful process. Webster's dictionary (1990) defines a goal as "an end that one strives to attain." According to Covey, Merrill and Merrill (1994, p. 136), goal setting is the process of translating visions into achievable, actionable things. Carrying out measurable, specific and time-bound goals is important, and involves recognizing one's abilities, limitations and the overall structure of the international program.

It is important to fully understand the type of international experience one participates in, the length of stay, language requirements, and current status when setting goals. An international experience can be classified based on its purpose. Purpose includes study abroad, work abroad, cultural exchange, and internships.

The purpose of an international experience drives the goals that are written, but it is equally important to consider language and length of stay. Goal setting is important regardless of the program structure. Goals provide direction and purpose for what one wants to achieve (Tritz, 1990, 1994).

Expectations

Goals are set with the expectation that positive changes will occur (Covey et al., 1994, p. 138). Expectations go hand-in-hand with goals. To achieve each goal set by either the program or the student, certain expectations must be met.

Expectations for study abroad programs exist, but are often not communicated very effectively either in written or verbal form. If goals are to be achieved, then what is expected is a major piece of the puzzle. Granted, circumstances are different in every situation, but overall goals must be constructed with realistic outcomes in mind. If students expect one thing and something else occurs then objectives are not met. Therefore, we must be careful when stipulating certain ideas to reach program goals and clearly outline what is expected by all those involved.

An awareness of program expectations is important for effectively utilizing time and resources. According to Covey et al. (1994, p. 223), when seminar participants were asked how much time was spent in their organizations dealing with the effects of unclear expectations, they said approximately 60 percent.

International experiences can be similar. For example, international students often expect to have jobs to help support their time at U.S. universities, but find the process of obtaining a work permit extremely difficult and time consuming.

Focus Academic Pursuits

Studying abroad usually occurs during the junior year when most students have some direction in their academic program. Areas of specialization are often required by most departments during the junior year. Most benefit will be gained if one's academic program is focused because goals will often mirror what one wants to achieve academically.

It is amazing how having a focus will benefit an individual. Granted, diversity in course work and gaining new perspectives are important, but it is also important to look at the big picture and where one will be in five or ten years, so as to gain the most from an international experience.

Resources/Contacts

Utilizing the resources for a study abroad experience can be overwhelming considering the information that exists. Resources both at home and while abroad are important information sources.

The study abroad center on a university campus is a logical place to start. These centers have information on tourism, culture, entertainment, restaurants, youth hostels, and many other topics. This service offers this same information for nearly 130 countries world-wide.

The world-wide-web is another information-packed place to gather details. One can get a passport, contact an embassy, or find out tips on what to pack, directly through the Internet. The Internet is a gold mine of information just waiting to be tapped.

Another resource is students from the country one is planning to visit. Exchange programs offer the opportunity to meet and interact with those students, and get a better feel of the language and customs, and to taste some of their food.

Tapping into those students who were past participants will provide tremendous insight as well. They know what to expect, what the food is like, what the people are like, what may be most helpful, and what it is like to be an American in an international setting. One student who participated in an exchange to the Ukraine felt that meeting with past participants was very beneficial because it gave insight into what the country and its people were really like (Tritz, 1996).

Financial Management

Financing a study abroad experience can be an intimidating task considering the cost of airline tickets, room and board, and all the necessities on one's packing list. However, careful budgeting should alleviate money shortages.

A monthly itemized budget works best because it clearly outlines one's expenditures over the course of a month. Certain programs require total payment of everything, from airline tickets to food, prior to departure; whereas other programs require participants to only pay for items such as airline tickets, insurance, and other incidental fees prior to departure. Once in the country, a monthly budget will help to better balance possible income and expenditure. A budget should include items such as room and board, health insurance, books and supplies, entertainment and activities, souvenirs, local travel, incidental fees, and pocket money. In

addition, it is always recommended to exchange money at a bank. Exchanging money on the black market is, first of all, illegal in many countries, and secondly, it is dangerous.

Many of the items listed above will vary depending on the program, the country, and the lifestyle of the participant. Fixed costs for a program are travel to and from the host country, food, and housing. These are essential wherever one's experience takes one. From there on, it is a matter of the lifestyle one chooses.

One should take into account possible unforeseen or unavoidable events. A golden rule when traveling abroad is to take an extra \$500, if possible. Emergencies can occur in the blink of an eye and leave one in a precarious situation. Wiring money is an option in some parts of the world, but not others. A good budget always has a little flexibility built in.

Cultural Preparation

According to Applebaum et al. (1973, p. 86), culture is the cumulative deposit of knowledge, experience, attitudes, meanings, hierarchies of status, religion, timing, role expectations, spatial relations, and concepts of self, the universe, and the relationships acquired by a large group of people over the course of time.

It is important to learn about culture shock and how one will be affected by it. One's first experience can bring on feelings of homesickness, certain illnesses due to the change in food and water, and other possible things (Tritz, 1990). However, with experience, a new country or new situation is handled better because psychologically one is better prepared. Our bodies do not always adjust with experience, but our mind-set is more open and the adjustment period gets smoother with more travel experience (Tritz, 1996). It is important to realize how studying abroad affects people. According to Hawks (1994), the level of enthusiasm is highest during the first month. Everything is new, one is new to the culture and the town. However, that feeling soon wears off as time goes on; the newness of the experience

wears off, and sometimes homesickness sets in (Hawks, 1994, p. 63).

It is important to find pertinent information such as cultural dos and don'ts, eating habits, food preferences, drinking customs, and personal space. Even more important, one should have a complete physical and the proper immunizations, note allergies, and be cognizant of health insurance, including policies.

Identify Perceptions

Applebaum et al (1973, p. 88) indicate that human perceptions should give us an accurate picture of our social environment. Unfortunately, they seldom do, because various cultural elements prejudice the meaning we attach to social stimuli. Perceptions will vary with each individual and how we view the world. Several common views are ethnocentrism, the world view, absolute value system, stereotypes, and prejudices.

According to Applebaum et al. (1973, pp. 89-90), ethnocentrism is the "unconscious tendency to view and judge other people by our own customs and standards. Our ethnocentric perception hampers intercultural communication because we are unable to view objectively customs or beliefs that differ from our own." Understanding why a society does what it does is more important. Different isn't good or bad, it is just different; therefore, judging a society based on one's own values is not appreciating fully the country and culture one is trying to experience.

Stereotypes and prejudices are described as a set of attitudes applied to a person or group of people based on their class or position in society (Applebaum et al., 1973, p. 91). Stereotypes and prejudices are often fueled by the media. Television serves as one very popular way of transmitting a view of what is happening around the world. The perceptions gained by viewing selected television shows lead to stereotypes and generalizations for an entire country. The experience of being different can have both positive and negative effects: positive in the

sense that one is often showered with attention and privileges that are not often granted to others; negative by means of verbal abuse and various forms of harassment (Tritz, 1996).

It is important to identify perceptions of people from one's host country as well as have a sense of self-awareness by knowing what perceptions one has of the country one will be in. From politics to lifestyles, people around the world are perceived in different ways. Being different is not good or bad, it's just different; therefore, it is important that each student going abroad is cognizant of various world views and attitudes.

Language Training

Many of the study abroad opportunities offered under the auspices of International Agriculture Programs at Iowa State University do not require fluency in a second language, because many of the classes and tours offer translators to accompany students. However, this should not be seen as a crutch. Having some language skills in preparation for a study abroad experience is very beneficial.

In the Slovak Student Exchange nearly every student wished more language training had been available prior to the experience. Students lived with host families and nearly all of them felt that more language training would have made the transition easier. If language fluency is not required for a program, it is important for three reasons to learn some language.

First, attempting to speak and communicate with people of a different culture will show an initiative and a willingness to assimilate and learn about the host country. A lift of the eyebrows and a smile from the person one is communicating with will be a good indication that trying is important. Second, language training will be extremely beneficial when traveling within a city, or country, shopping, locating and eating at restaurants, and in many other situations. This ability gives one a feeling of independence. Finally, language skills can be extremely helpful when one finds oneself in precarious situations.

Communication

When we interact with people from other cultures as we travel abroad, we are engaging in intercultural communication. According to Applebaum et al. (1973, p. 99), intercultural communication occurs when the speaker or communicator is from one culture and the listener or audience is from another. We communicate differently, and it is important to realize that communication in settings other than our own can be challenging as well as rewarding.

We communicate through the use of verbal, non-verbal and listening techniques. The words used in one context may have a different meaning in another context or situation, even if translated. Some words in one language may not exist in another language.

Non-verbal communication consists of facial expressions, actions, and mannerisms. It is a common experience among people who travel to find difficulty in interpreting the facial expressions of different people. Such expressions as shaking heads from side to side as an indication of “no” is interpreted differently in various parts of the world. Therefore, understanding and being cognizant of non-verbal cues will help in understanding the verbal communication and enhance listening.

It takes a lot of practice to become a good listener. In an international setting, listening skills are extremely important; getting directions to the bus stop, listening to the waiter describe the menu or listening to a lecture on milk production are all examples of when listening is important. A different language will challenge everyone’s listening skills because it really takes a concentrated effort on the part of the listener.

An Open Mind

An international experience is a beneficial and worthwhile endeavor, and the correct attitude is important for having a high quality experience. A positive attitude will benefit a person

tremendously. An international experience offers potential growth in terms of technical skill, culture, history, politics, language, geography and so much more. The ability to absorb the experience is only enhanced with the right frame of mind.

One should take advantage of every opportunity that presents itself; that is the only way to really experience a culture. It is all about risk-taking. One is taking a risk just by stepping outside of one’s own culture, so it is important to build on each and every experience while overseas. An open mind and a positive attitude will not only set the stage, but will also enhance the overall international experience.

Educational Importance

Today there is recognition of the fact that there is a direct connection between educational and informational exchange and economic development (Davis, 1995). International experiences provide this reciprocity of information, and the insight into another country’s cultural system. Internationalization is only as important as we make it. Universities need to commit both academically and financially to study abroad programs.

The story of Samantha Smith portrays how someone so young had a vision of some day understanding a culture so unlike her own. Her efforts are still seen today, and it has provided an opportunity for many students to see firsthand the changes sweeping over Eastern Europe. The journal entries of the many students who have been to Eastern Europe and other places around the world will attest to the tremendous amount of information gained from an experience abroad. Often one only needs to look into the eyes of exchange students as they talk about their trip to realize that for them it was an experience of a lifetime.

Studying abroad is a phenomenon that comes over one and changes one forever. A phenomenon is a unique and unusual experience for each individual, just like each trip abroad. An international experience is a worthy

educational tool and as educators and administrators, it is our responsibility to ensure that the next generation is awarded this opportunity.

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BIODYNAMIC AGRICULTURE: A PARADIGMATIC ANALYSIS

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Outstanding Research Presentation

This paper is one of five outstanding research papers from the Thirteenth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., April 4-6, 1997.

Abstract

Biodynamic agriculture is the world's oldest alternative agricultural movement. It is not well-known, however, in the United States. This article provides a basic foundation for practitioners and professionals to develop a comprehensive framework and understanding of the paradigm for biodynamic agriculture. It compares ontological, epistemological, and methodological beliefs about traditional, industrial, organic, and biodynamic agriculture. A paradigmatic model for inquiry developed by Egon Guba was used in analyzing biodynamic agriculture. As the industrial paradigm of agriculture is increasingly challenged by environmentalists an understanding of alternative agricultural paradigms becomes more important. This basic understanding should be based on disciplined analysis rather than on emotion, myth, and superstition.

Biodynamics is the oldest organized alternative agricultural movement in the world. From the beginning, biodynamics has been an approach

that addresses the biological, technical, economic, and social aspects of farming and gardening. The biodynamic movement has

developed methods of organizing farms and methods of plant and animal husbandry; it also revived elements of traditional approaches that have proved to be sound. Beginning in 1928, the biodynamic movement pioneered the marketing of certified food; this innovation has since been taken up by many other groups (Koepf, 1989, p. 17).

Although biodynamic agriculture is the world's oldest alternative agricultural movement, it is not well-known in the United States. It is referenced in the USDA's annotated bibliography Tracing the Evolution of Organic/Sustainable Agriculture (Gates, 1988). When the authors have mentioned biodynamic agriculture in conversations with extension agents and teachers of agriculture around the United States, most have not heard of it. With the passage of the 1990 Farm Bill which includes the regulation and certification of organic produce, however, more agents and teachers can expect questions about this world-wide movement. Primary sources on biodynamic agriculture are not easy to find. Furthermore, these books use language and describe concepts that are outside most agricultural educators' frames of reference. The problem is to describe biodynamic agriculture in terms that are accessible to extension agents and teachers of agriculture.

Purpose

The purpose of this paper based on Lorand's (1996) doctoral thesis was to provide a basic foundation for practitioners and professionals to develop a comprehensive framework and understanding of the paradigm for biodynamic agriculture. The specific objectives were to describe:

1. The beliefs about the nature of reality with regard to agriculture (ontological beliefs).
2. The beliefs about the nature of the relationship between practitioners and agriculture (epistemological beliefs).

3. The beliefs about how the biodynamic practitioner should go about working with agriculture (methodological beliefs).

Method

The need for a systematic, explicit presentation of the essential principles underlying a set of agricultural practices was articulated. The elements of such a presentation need to reflect the rigors and standards of systems thinking. Such an analysis of biodynamic agriculture was accomplished using Guba's (1990) model. Guba maintains that paradigms (the set of beliefs that guide action, whether they are everyday actions or action taken in connection with a disciplined inquiry) can be best analyzed by answering three specific questions: (a) what is the nature of reality (ontology), (b) what is the nature of the relationship between the knower and that reality (epistemology), and (c) how should the knower (the practitioner) use that knowledge concerning that reality in practice (methodology)? (pp. 17-18).

The authors reviewed the literature about biodynamic agriculture asking these three questions. To create a frame of reference as a guide for the reader, they compared biodynamic agriculture with the better-known paradigms of traditional, industrial, and organic agriculture. In addition, the descriptions of biodynamic agriculture in the literature were interpreted to systematically link and clarify key concepts and principles of biodynamic agriculture with those of traditional, industrial and organic agriculture.

Results

The review of literature answered the three questions of importance to this study and met the study's objectives. Critical concepts emerged in all three areas of inquiry.

Ontological Beliefs

The core concept in the inquiry of the ontology of biodynamic agriculture is the concept of a "spiritual-physical matrix." This term was developed by Lorand (1996) to capture a unique

concept that has widespread theoretical and practical implications for the study of biodynamic agriculture.

The majority of current scientific study in academia has been restricted primarily to the quantifiable material/physical realm. The ontology of biodynamic agriculture is far more expansive, according to Rudolf Steiner (1925, 1929), an early 20th century philosopher and scientist, whose work was the foundation for biodynamic agriculture. In addition to physical properties, biodynamic agriculture consists of elements, principles, and forces that cannot readily (or not at all) be seen, touched, weighed, measured or counted. Steiner identified the components of this additional dimension as "spiritual." These spiritual elements and forces are for the most part intangible, invisible and qualitatively different from the elements and forces in the material/physical realm. Steiner observed that contemporary language lacks the appropriate descriptors, terminology and science to readily and accurately observe and describe this spiritual dimension of reality.

The concept of a spiritual-physical matrix of elements, forces and principles includes both the material/physical dimension and the spiritual dimension. What is real (the ontology) is the integration of all of the forces. For the biodynamic practitioner, the task is to perceive and analyze phenomena based on this expanded reality. Steiner recognized the physical/material world of traditional science. However, he believed that although disciplined, these scientists only perceived part of a much larger whole, and therefore were inaccurate in many of their assumptions and inferences.

These interwoven, interdependent spiritual and physical dimensions described by Steiner, exist and function as a consistent, interactive whole, a matrix of interwoven substances, forces, rhythms, trends and tendencies. According to Steiner, the elements and forces of the spiritual dimension are observable directly by those individuals especially trained through a rigorous path of knowledge targeted at expanding the

capacities of thinking and perception to include the spiritual dimension.

The path to enable anyone to perceive spiritual phenomena directly was described by Steiner in several books and hundreds of lectures. In many respects, the path Steiner describes parallels similar paths of knowledge described by philosophers of many other cultures throughout history (Buddhism, Hinduism, the Yaqui and other Native American spiritual leaders). According to Steiner, the more advanced the individual is in his/her knowledge and discipline, the more he or she is capable of perceiving the spiritual dimensions directly and understanding their effect in the physical/material realm. In some ways Steiner's ideas appear as a synthesis of many ancient, spiritual traditions. However, he added distinct and original insights.

The effects of these spiritual elements and forces can be perceived in the material/physical world, directly and by inference, by people without specialized training, if they have an open mind to such phenomena and use a guided observation. Whether the practitioner has developed his/her insight through following a path of knowledge or not, all agricultural practitioners can put Steiner's suggestions to practical use. However, mastering biodynamic agriculture would include a serious effort at mastering additional perceptive capacities.

The basic principles of the ontology of biodynamic agriculture are:

1. The earth is a living being in a living universe characterized by a spiritual-physical matrix.
2. Substances are carriers of forces that create life.
3. Celestial rhythms directly affect terrestrial life.
4. Animals and humans emancipate from celestial rhythms.

5. The farm is a living, dynamic, spiritual individuality (spiritual perspective).

Epistemological Beliefs

A crucial core concept emerging from the inquiry into the epistemological relationship between the practitioner and agriculture is the diagnostic-therapeutic relationship between the farmer and the farm totality. In biodynamic terminology, farm totality is called "farm individuality", a term that connotes and presupposes a comprehensive picture of farm health. Steiner makes the analogy between clinical farm practice and clinical human medical practice. Human health is far more complex than mere physical health. In the same way, farm health is not just the physical aspect. Thus, the role of a competent biodynamic practitioner is that of perceiving the spiritual forces at work through the material/physical aspects of the farm, and establishing practices that establish, sustain, and when necessary, restore balance and integration of both the spiritual and physical aspects. This leads to a strong preventative, immunologically-oriented practice similar to the practices of holistic medicine. Plant, animal and human immunological health form a central pillar of concern in the biodynamic paradigm.

Methodological Beliefs

Biodynamic agricultural methods were observed to be divided into two categories. However, the inquiry into biodynamic methods demonstrates how both of these categories lie consistently within the frame of reference established by the ontology and epistemology.

The first category of methods used by competent biodynamic practitioners is described

as the "biological" methods. These are well-known to agricultural educators and include mulching, raised beds, companion planting, carefully selected crop rotations, inter-cropping, green manures, water conservation and revitalization, diversity of domestic animals and manures, diversity of field crops, biological pest control, and integrated diversified farming systems, such as gardening, dairy farming, and orcharding together (Koepef, 1993; Pfeiffer, 1977; Philbrick, 1971; Remer, 1986; Storl, 1979).

The second category, the "dynamic" aspects of biodynamic agriculture, is less familiar to agricultural educators. It includes such methods as compost preparations, primary field sprays, teas as foliar sprays and for pest and weed prevention and management, working with celestial rhythms in both plant production and animal husbandry, veterinary homeopathy, and the characterization of each farm as an "individuality." Using these methods appropriately and systematically requires the practitioner to grasp the ontology and his/her role as a diagnostician and therapeutic agent for the farm totality.

The ontological, epistemological, and methodological differences among traditional, industrial, organic, and biodynamic paradigms of agriculture that were observed in this inquiry are depicted in Tables 1, 2 and 3, respectively. A knowledge map of biodynamic agriculture was constructed to translate difficult terms and concepts into a concise, understandable form. This map is presented in Figure 1. A reading sequence of the four most important sources is offered in the recommendations section of this paper for the use of agricultural educators who wish to go beyond the tables explaining the paradigm of biodynamic agriculture.

Table 1

Ontological Differences Among Agricultural Paradigms.

Traditional agriculture	Industrial agriculture	Organic agriculture	Biodynamic agriculture
<p>Traditional agriculture varies from culture to culture, from region to region, sometimes from tribe to tribe within a culture and a region. It is often a complex, living and dynamic web of relationships, in which:</p> <p>the earth is a living being within a living universe;</p> <p>forces are at work in all that is both animate and inanimate;</p> <p>celestial rhythms play a role in health and prosperity;</p> <p>animals and humans are an integral part of the whole;</p> <p>the farm is not considered a distinct being.</p> <p>Although these elements form a whole, the image of health is not necessarily discernible.</p>	<p>Industrial agriculture is an economic enterprise aimed at maximum short-term profit based on the most efficient use of resources and maximization of labor and technological efficiencies, in which:</p> <p>the earth is a relatively unlimited source of exploitable resources;</p> <p>substances are analyzed for a mechanical/manipulative use;</p> <p>the influences on natural conditions are limited by technology;</p> <p>animals and humans are seen primarily in the context of output and cash flow;</p> <p>the farm is often seen as a machine or "factory" (mechanical perspective).</p>	<p>Organic agriculture sees life as a complex ecosystem in which:</p> <p>nature, on earth, is a living ecosystem, albeit purely material;</p> <p>substances are analyzed for balanced, ecological use;</p> <p>natural conditions are accepted and adjusted to;</p> <p>domestic animals are often excluded for ethical values;</p> <p>the farm is seen as an integral part of a larger ecosystem (ecological perspective).</p>	<p>Biodynamics is a complex, living and dynamic (spiritual) system of agriculture, in which:</p> <p>the earth is a living being in a living universe characterized by a spiritual-physical matrix;</p> <p>substances are carriers of forces (both physical and spiritual) that create life;</p> <p>celestial rhythms directly affect terrestrial life;</p> <p>animals and humans emancipate from celestial rhythms;</p> <p>the farm is a living, dynamic, spiritual, individuality (spiritual perspective).</p>

Table 2

Epistemological Differences Among Agricultural Paradigms.

Traditional agriculture	Industrial agriculture	Organic agriculture	Biodynamic agriculture
<p>The traditional practitioner stands in a relationship to farming that is characterized by customs, rituals, generational wisdom, tribal rules, superstitions, religious mores and often other external values.</p>	<p>The industrial practitioner stands in an exploitive business relationship with the “factory” farm.</p> <p>Observation, analysis and policy decisions are made on a bottom line basis. A technological framework shapes and restrains the thinking, problem identification and analysis of the practitioner.</p>	<p>The organic practitioner stands in a benevolent appreciation of the complexity of the ecosystem and attempts to work within the framework of this ecosystem towards sustainability (zero-sum net gains or losses).</p>	<p>The biodynamic practitioner stands in both a supportive and remedial relationship to this complex, living, dynamic farm individuality.</p> <p>Observation, diagnosis and therapy development are the central themes of the practitioner’s relationship with the farm.</p>

Table 3

Methodological Differences Among Agricultural Paradigms.

Traditional agriculture	Industrial agriculture	Organic agriculture	Biodynamic agriculture
<p>The traditional practitioner practices rote patterns of seasonal preparations, planting, cultivation and harvesting based on convention as handed down by parents, tribal elders and consistent with customs.</p> <p>Innovations are not continually sought out and typically are slow in acceptance.</p> <p>Biodiversity is part of the traditional paradigm, stemming from the farmer's need for self-sufficiency with as much variety as possible.</p>	<p>The industrial practitioner is successful to the extent that economic profit is maximized. Consequently, methods and practices that lead to efficiencies of technology and labor are employed, assessed, and refined.</p> <p>Innovations are constantly sought out, but evaluated on the basis of their contribution to added profit from the business enterprise, which may come from increased output or decreased input.</p> <p>Biodiversity is inconsistent with efficiency, and monocrop production is the rule.</p>	<p>The organic farmer seeks a sustainable subsistence, and restricts his/her activities to non-exploitive practices that “do no harm,” and thus support ongoing sustainability.</p> <p>Innovations are readily accepted to the extent that they enhance sustainability and respect economic limitations.</p> <p>Organic production does not emphasize biodiversity as an essential principle, and monocrop production is common.</p>	<p>From the diagnostic-therapeutic relationship flow the biodynamic practitioner's activities which are divided into supportive (preventative), maintenance and remedial (therapeutic) interventions.</p> <p>In practice, there is a strong focus on balance, biodiversity, and plant and animal immunity.</p> <p>Innovations often evolve from heightened perception of the soil, plant and animal health rather than from the import of technology.</p> <p>All activities are designed to enable the farm individuality to experience maximum long-term health.</p>

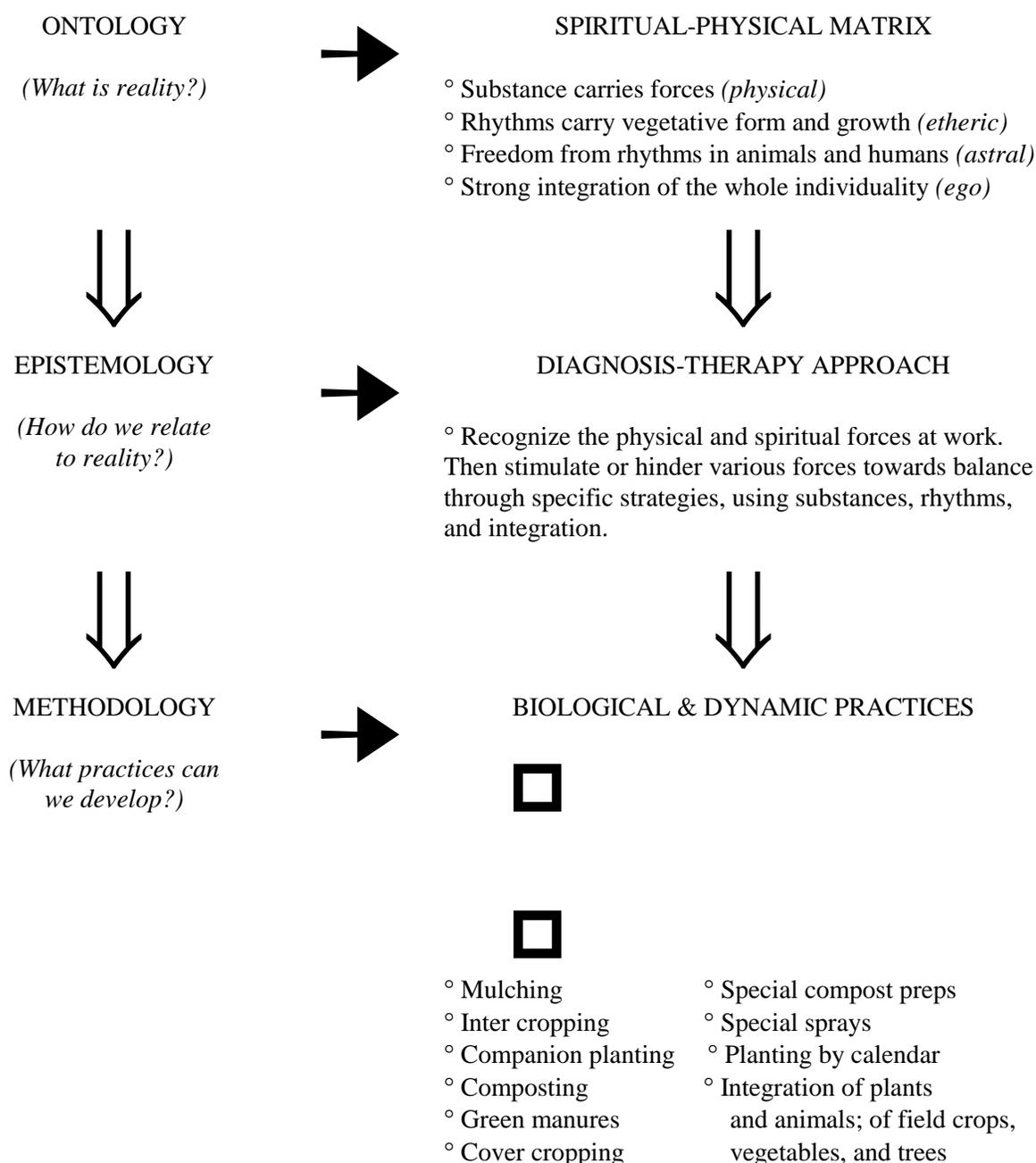


Figure 1. Knowledge Map of the Paradigm of Biodynamic Agriculture

Conclusions

The biodynamic paradigm of agriculture is complex, difficult to understand, and requires substantial study of the pertinent principles and practices. The seminal works (Steiner, 1925, 1929) contain esoteric concepts written

originally in German. These concepts are not well connected to the current knowledge and experience base of agricultural educators. A lack of current information on biodynamics was apparent in the literature review.

A second conclusion was that biodynamics is a comprehensive and systematic paradigm of agriculture. It is an integrated whole where the methods are derivative of the ontology and epistemology. Biodynamic agriculture offers many benefits and opportunities for agriculturists today.

The third conclusion was that the paradigmatic model for inquiry developed by Guba provides a useful, if somewhat challenging, model for the systematic analysis of agricultural paradigms. The analysis helps one to understand not only the unfamiliar paradigms of organic and biodynamic agriculture but the familiar paradigms of traditional and industrial agriculture.

Recommendations

Five opportunities emerge where the understanding and communication of biodynamic agriculture can be readily facilitated.

1. The knowledge map should be used for self-study, for presentations on biodynamic agriculture, for seminars or courses, and as a stand-alone exhibit.
2. Supplements to the knowledge map in the form of distributed written material, overheads, reading lists, and experiential learning activities are needed to develop an understanding of biodynamic agriculture.
3. The study of biodynamic agriculture would be better facilitated by a biodynamic dictionary that translates Steiner's terminology into more familiar agricultural and scientific terminology.
4. Those who wish to learn about biodynamics should visit practicing biodynamic farmers. Names and locations of existing farms can be secured from the Biodynamic Farming and Gardening Association of North America, Inc., Kimberton, PA.
5. For additional reading, the references in the thesis (Lorand, 1996) should be consulted. As a

beginning, the authors recommend the following sequence of readings: (a) Sattler & Wistinghausen, 1989, *Biodynamic Farming Practice*, (b) Storl, 1979, *Culture and Horticulture: A Philosophy of Gardening*, (c) Kolisko & Kolisko, 1978, *Agriculture of Tomorrow*, and (d) The Biodynamic Farming and Gardening Association of New Zealand, 1989, *Biodynamics: New Directions for Farming and Gardening in New Zealand*.

Educational Importance

Opportunities for a theoretical breakthrough in agriculture and other fields may come through the rigorous use of paradigmatic analysis. Guba's model provides a form that challenges the student in any field to make explicit basic tenets that are most often left unspeakable. Paradigmatic analysis brings to systems thinking a skeletal framework or minimal set of standards to be met in order to assure comprehensive, disciplined inquiry. Further, it provides a powerful and transferable model of disciplined inquiry that may lead to better understanding of agriculture.

As the industrial paradigm of agriculture is increasingly challenged by environmentalists, and as alternative paradigms of agriculture, organic and biodynamic, are considered, this disciplined analysis becomes important to separate facts from emotions, myths, and superstitions.

As agriculturists consider the advantages and disadvantages of different paradigms of agriculture, they will certainly turn to agricultural educators for information and help with analysis. Agricultural consultants working in countries such as those of Central and Eastern Europe which are consciously transforming the agricultural sector particularly need a broad understanding of agriculture and alternative agricultural paradigms.

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IOWA AGRIBUSINESS INTERNATIONAL NEEDS ASSESSMENT:
IMPLICATIONS FOR EDUCATION

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Outstanding Research Presentation

This paper is one of five outstanding research papers from the Thirteenth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., April 4-6, 1997.

Abstract

Iowa businesses were surveyed in 1996 to gain a profile of firms and assess their international needs. The majority of the 440 firms that responded were relatively small in number of employees, yet had relatively large annual revenues. Agribusinesses involved in international business indicated a number of practical needs over the next five years, including leads about trading opportunities, information on laws and tariffs, and foreign business contacts. While a relatively low number of responding firms indicated language training as a need, those that did identified a number of languages which are important to their business. They include Spanish, Chinese, and Japanese. Agribusinesses indicated a geographical interest in Latin America and Asia. Implications for Iowa State University are that training and information on practical and immediate concerns are needed to complement the development of future programs providing training and research focused on specific geographic areas.

Introduction

The number and scope of international interactions and interdependencies has increased steadily in recent centuries as has the number of people affected by them (Anderson, in Pike and Selby, 1988). Factors that have shaped perceptions of global interdependence of the world include rapid social and technological change, and economic interconnectedness. In agriculture, a global agricultural system has evolved based upon international trade (Schuh, 1985).

Educational institutions have responded to global interdependence with a movement to internationalize curricula which began in the post-World War II era (Hicks & Townley, 1982). However, education in agriculture still requires attention to improve international skills and knowledge. In an Iowa study, Wirth and Martin (1995) found that agribusinesses favored the inclusion of international perspectives in educational programs to prepare students for a global economy. A study of 277 students in agronomy classes at the University of Nebraska found them lacking knowledge of international agriculture (Mason, et al., 1994). Etling (1995), the North Central Region Curricular Committee Project (1989), Bawden, Busch and Gagni (1990), and Lunde, Baker, Buelow and Hayes (1995) present convincing cases for realigning the offerings of higher education in agriculture with the changing demands of a global agriculture system. Diets have changed, environmental concerns have become critical, the mobility of labor and capital has increased, and innovations in science and technology permit new relationships to emerge in the knowledge sector without regard for national borders (Bawden, Busch & Gagni, 1990).

In view of the importance of education in the global context, a research project was undertaken in 1996 to identify and assess the international education needs of Iowa businesses operating in all sectors (Acker, Ralston, Schmidt & Shelley, 1996). The purpose of the study was to generate appropriate information to enable Iowa State University

(ISU) to (a) improve services to Iowa businesses, and (b) internationalize the ISU curriculum to prepare students to operate in a global economy. The survey results were to be used to guide interviews with representative firms to develop a deeper understanding of trends identified in the initial survey.

This paper specifically addresses the international education needs of Iowa agribusiness firms. The results should enable ISU and other educational institutions to respond by improving existing programs and developing new educational programs to meet these needs. The survey was supported by a grant from the Iowa State University Council on International Programs.

Methodology

Questions for the survey were developed by a team of four researchers over a four-month period, and subsequently pilot tested. The survey was mailed to 4,323 Iowa business firms, representing approximately 5% of the 89,815 firms registered in Iowa. The response rate was 10.14% (440 firms). Project resources did not permit a comparison of respondents to nonrespondents.

Profile of Responding Agribusiness Firms

The 440 firms responding to the questionnaire were asked to identify the sectors in which they conducted business. One hundred and ten firms responded that they were involved in agribusiness, and 71 reported involvement in agribusiness processing. This paper focuses only on the responses of these agriculturally-related businesses. The total number of agriculturally-related business for which results are presented in this paper is 155, because some businesses were involved in both agribusiness and agribusiness processing.

Number of Employees

The distribution of employees of Iowa agribusinesses responding to the survey shows that most are small- to medium-sized firms. As shown in Table 1, 70 (45.1%) of the responding agribusiness firms had fewer than 25 employees, and over 80% (126 respondents) had 100 or fewer employees. Only 7.8%, or 12 agribusiness respondents, had more than 500 employees.

Total Revenue or Sales

When stratified by total revenue or sales, 29% (43 respondents) had total annual revenue or sales of over \$25 million, by far the category with the most respondents. In fact, agribusiness firms having more than \$10 million in revenue or sales accounted for over 42% (63 respondents) of the total agricultural respondents. The distribution of agricultural respondents by annual revenue or sales is shown in Table 2.

Table 1

Distribution of Agricultural Respondents by Number of Employees.

No. of employees	No. of respondents	% of respondents	Cumulative %
1 - 25	70	45.1	45.1
26 - 50	27	17.4	62.5
51 - 100	29	18.7	81.2
101 - 250	13	8.4	89.6
251 - 500	4	2.6	92.2
501 - 1,000	4	2.6	94.8
More than 1,000	<u>8</u>	<u>5.2</u>	100.0
Total	155	100.0	

Table 2

Distribution of Agricultural Respondents by Total Annual Revenue or Sales.

Revenue/sales	No. of respondents	% of respondents	Cumulative %
Under \$500,000	18	12.1	12.1
\$500,000 < \$1 million	13	8.9	21.0
\$1 million < \$2 million	7	4.7	25.7
\$2 million < \$4 million	22	14.9	40.6
\$4 million < \$10 million	25	16.9	57.5
\$10 million < \$25 million	20	13.5	71.0
\$25 million or more	<u>43</u>	<u>29.0</u>	100.0
Total	148	100.0	

Employees Engaged in International Business

Respondents were asked to indicate what percentage of their employees were directly involved in international business activities. As shown in Table 3, over 92% of responding agribusinesses had at least some of their workforce directly engaged in international activities. However, the percentage of employees involved in international activities was relatively small. Most firms (83.2%; 129 respondents) had less than 10% of their workforce directly engaged in international business activity. Only 11 agribusiness firms (7.1%) had over 50% of their employees engaged in international business activities.

Revenue from International Business Activity

Businesses were asked to identify their total annual revenues or sales derived from international business activities. As illustrated in Table 4, 93.4% of responding agribusinesses indicated that at least some of their revenue or sales came from international business activities. But, once again, the percentage of income from international activities was relatively low. Most respondents (62.9%; 95 respondents) indicated that their international revenue or sales fell between 1 and 10%. Twenty-three respondents (15.2%) indicated that the percentage of their international revenues or sales was between 10 and 25% of their total revenue. In addition, 8% (12 respondents) indicated that 75% or more of their total revenue or sales came from international business

Table 3
Percentage of Employees of Agricultural Respondents Directly Engaged in International Business Activities.

% of employees	No. of respondents	% of respondents	Cumulative %
0%	12	7.7	7.7
1% < 10%	117	75.5	83.2
10% < 25%	9	5.8	89.0
25% < 50%	6	3.9	92.9
50% < 75%	5	3.2	96.1
75% and over	<u>6</u>	<u>3.9</u>	100.0
Total	155	100.0	

Table 4
Percentage of Annual Revenues or Sales Derived From International Business of Agricultural Respondents.

Revenue/sales	No. of respondents	% of respondents	Cumulative %
0%	10	6.6	6.6
1% < 10%	95	62.9	69.5
10% < 25%	23	15.2	84.7
25% < 50%	9	6.0	90.7
50% < 75%	2	1.3	92.0
75% and over	<u>12</u>	<u>8.0</u>	100.0
Total	151	100.0	

International Agribusiness Needs

The above profile provides an understanding of the nature of Iowa agribusinesses and the importance of international business. The following information from the survey will provide a better understanding of the perceived needs of Iowa agribusinesses for effectively conducting international business activities.

The survey presented respondents with a list of 19 possible needs of businesses to conduct international activities. Table 5 presents a ranking of the agricultural respondents' needs as foreseen by them in the next five years. The most frequently expressed need was related to leads about trading opportunities, with 61.3% of the respondents indicating this as a need. Other prominent needs indicated were electronic communication (58.2%); laws and tariffs

(57.4%); market studies and marketing (56.0%); foreign business contacts (55.0%); information technology (52.9%); export documentation (51.0%); and transportation (50.0%).

As indicated in Table 5, 38.9% or 56 agricultural respondents replied that they foresee a need in language training in the next five years. Respondents were then asked to indicate what languages they considered a priority. Responses to this question can be found in Table 6. Of the 52 agricultural respondents to this item, 43 (82.7%) indicated training in Spanish was a priority. Other languages receiving a significant response were Chinese-Mandarin (26 respondents, 50%); Japanese (21 respondents, 40.4%); Chinese-Cantonese (18 respondents, 34.6%); Russian (16 respondents, 30.8%); and French and German, each with 14 respondents or 26.9%.

Table 5

Areas of Need Foreseen in the Next Five Years for Agribusiness.

Rank	Need area	% of responses	No. of responses
1	Leads about trading opportunities	61.3	93
2	Electronic communication	58.2	85
3	Laws and Tariffs	57.4	85
4	Market studies, marketing	56.0	84
5	Foreign business contacts	55.0	82
6	Information technology	52.9	73
7	Export documentation	51.0	75
8	Transportation	50.0	71
9	Financial analysis	47.9	69
10	Effective business correspondence	46.8	65
11	Document translation	45.5	66
12	New Product/services development	45.6	63
13	Employee development training	44.1	60
14	Training in culture - specific info	42.2	60
15	Foreign language training	38.9	56
16	Environmental analysis	34.8	48
17	Packaging and processing	34.3	46
18	Political analysis	32.9	46
19	Overseas site inspections	24.8	34

Table 6

Important Foreign Languages of Agricultural Respondents.

Rank	Language	No. of respondents	% of respondents (n=52)
1	Spanish	43	82.7
2	Chinese (Mandarin)	26	50.0
3	Japanese	21	40.4
4	Chinese (Cantonese)	18	34.6
5	Russian	16	30.8
6/7	French	14	26.9
6/7	German	14	26.9
8	Portuguese	9	17.3
9/10	Vietnamese	8	15.4
9/10	Italian	8	15.4
11	Malay - Indonesian	7	13.5
12	Hindi	5	9.6
13	Arabic	4	7.7
14	Bengali	2	3.8
15/16	African languages	1	1.9
15/16	Urdu	1	1.9

Implications

The fact that over 90% of the responding agribusinesses derived at least some of their income from international business, and that some of their employees were involved in international activities should be of great interest to ISU as well as other land-grant universities with a similar state agribusiness profile. Given the projection that the importance of the international aspects of agribusiness will increase (Schuh, 1985), it is clear that ISU will need to strengthen and maintain globally relevant teaching, research, and outreach programs to meet the needs of agribusiness. Iowa State University's College of Agriculture currently offers undergraduate students opportunities to participate in any one of approximately 12 study and work abroad programs, an international agriculture secondary major and minor, a university-wide international studies minor, an international agriculture club, and classes with a faculty having considerable international experience. However, while the College, and ISU as a whole, has doubled the number of students studying and working

abroad since 1996, fewer than 4% of the 2,600 agriculture students participated in 1996-97. Furthermore, participation rates in the international agriculture secondary major and minor as well as in foreign language study are low.

The ISU College of Agriculture has also established a number of approaches to encouraging and recognizing global involvement of faculty. Examples include the newly-established "Excellence in International Agriculture Award", annual faculty development trips for six new teaching faculty and advisors, and an in-house competitive research grants program focused directly on international research exchange.

For the teaching program, adding a global perspective to agricultural curricula will be extremely important to Iowa businesses which require well-rounded, globally-aware employees who can provide expertise in the areas of need identified in this study. Agribusiness leaders frequently exhort universities to do more in preparing graduates to work in the global

economy. The ability to work cross-culturally is most often cited as a critical skill for success. The emphasis on cross-cultural skills, as opposed to skills in a specific foreign language, is particularly relevant as English continues to grow as the language of international business. Iowa State University and other land-grant universities will need to ensure that students personally experience another culture through study abroad and interactions with fellow students from other countries. Serious consideration should also be given to expanding courses in areas designed to expand our understanding of other cultures: geography, sociology, anthropology, and political science. New approaches to cross-cultural skill acquisition involving experiences beyond the classroom are needed. Educators could move students through a variety of preparatory activities, such as short-term travel courses, and visits to English-speaking countries early in their career with an aim of getting them involved in longer-term study and/or work experiences.

Language study is another means of deepening cross-cultural understanding. Efforts should be made to increase instruction in languages identified as important in this study, such as Spanish, Chinese, Japanese and others. ISU currently offers Spanish at all levels of study, but Mandarin is the only Asian language taught and is currently offered only to year one and year two students. In his study "Internationalizing the Land Grant University", Etling (1995) recommended raising requirements for foreign language competence, and providing options for students and faculty to gain and demonstrate language competence.

The need expressed by agribusiness firms for these languages is an indication also of the importance of regions such as Latin America and the Pacific Rim to Iowa agribusiness. Extension, student learning, study abroad, and research programs need to be at least partly directed towards these geographic areas.

ISU should also strengthen its outreach program to meet projected needs of agribusinesses.

Topics and areas of service such as leads about trading opportunities and foreign business contacts, information on laws and tariffs, and assistance in developing international market studies and marketing plans were identified in the study as being of primary interest to responding firms.

It should be realized that land-grant universities cannot successfully meet all the education and training needs of the private sector. Some of these needs are undoubtedly best performed in the private sector. However, land-grant universities have a key role to play in developing globally-prepared graduates and world citizens, the human resource base upon which businesses and communities depend. Also, more than just the needs of the business community must be considered. Universities should strive to provide education, research, and outreach programs that prepare clientele of the university to be successful in multiple settings. A balance must be maintained so that social, cultural, geographic, and political considerations are taken into account in the globalization of teaching, research, and outreach functions of the university.

The results of this study provide important guidance to the internationalization effort at ISU. Key issues requiring additional research with agribusiness leaders have been identified. As Bawden, Bush and Gagni (1990) point out, linkages between higher education and its stakeholders will be critical to the success of higher education and the society it serves. Land-grant universities would be well advised to solidify partnerships with institutions abroad, internationally inclined agribusinesses, and community groups with interests in international relations. The Board on Agriculture of the National Association of State Universities and Land Grant Colleges (1996) has also called for a renegotiation between society and the land-grant universities to, among other things, prepare "society-ready graduates" to participate in the global economy. In moving toward action in this area, a task force on globalizing agricultural science and education programs for America drafted a report (1997) with specific

recommendations on the implementation of this goal. It is anticipated that the work of this task force will help to prepare an enabling environment for the introduction of improvements identified in this paper.

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A CASE STUDY IN COLLABORATIVE CONSULTATION

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Outstanding Research Presentation

This paper is one of five outstanding research papers from the Thirteenth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., April 4-6, 1997.

Abstract

This case study examines the specific behaviors of a consultant who wishes to use a collaborative approach. Many consultants fail in dealing with non-technical topics in agriculture because they try to be experts in a setting for which they have little or no experience. The author reviews theories about consultation and leadership then adds his experience to develop and facilitate a workshop on teamwork and program planning in Mexico. Experiences gained from other consulting assignments are combined with the experience of this case study to describe, in a list of principles, the collaborative consultant approach.

Sometimes the consulting job you accept is different from the job you encounter when you arrive on site. A variety of problems can occur in obtaining a clear description of the job to be done and the employer's expectations. Communication involving different languages and cultures can break down. Often other groups and individuals, who are affected but not consulted initially, have different opinions than your employer. Conditions may change after you agree to consult and before you arrive. Expectations of your employer can change.

Uncertainty was a dominant characteristic of the consultant assignment in this case study. What started as an invitation to present a week-long workshop on strategic planning and teamwork changed dramatically. Without previous experience in collaborative consultation and a sound understanding of the workshop content the author might have been unable to adapt to

the new situation and lead a successful workshop which satisfied the participants.

Background to the Assignment

The author had previously taught a course in leadership for community development at the University of Monterrey, Mexico (UDEM), during the spring semester of 1995. UDEM invited him back in April, 1996, to present a week-long intensive workshop on the same topic to a group of faculty and staff that had not taken the course. They indicated that the emphasis would be on "teamwork and program development." When he arrived in Monterrey the day before the workshop, however, he learned of a few new details: (a) the participants were the members of UDEM's three non-academic departments (physical education, extra-curricular music and drama, and community service), (b) the department head of physical education had just been fired, (c) a new

position, division director, had just been created (and filled by the Rector) to administer and unify these three previously independent departments, and (d) the consultant was being brought in to meet with the faculty and staff (together for the first time) to help them "begin to work as a team" in this new administrative unit.

Purpose and Method

The new division director and the consultant agreed that the focus or purpose of the workshop would be to help the group learn to work as a team, which would include their input on their new division's plan of work. The difficulty in accomplishing this purpose was how to structure the workshop process and content so that participants would voluntarily accept and accomplish the purpose. The consultant was especially concerned about (a) the particular consultant role that he would use, (b) the leadership styles he would use, and (c) the choice and sequence of workshop activities.

The Consultant Role

Blake and Mouton's book, *Consultation* (1976) describes different approaches that a consultant can use. They describe five alternatives: (a) prescriptive, (b) theories and principles, (c) confrontation, (d) acceptance, and (e) catalytic (collaborative) consultation.

In prescriptive consulting the client is told what to do. The consultant takes the responsibility and makes the decisions. Theories and principles is a kind of intervention where the consultant helps the client to internalize the consultant's theories in order to deal with

situations using the new theories. Confrontation means challenging the client's assumptions to get the client to see the situation from a new perspective. Acceptant consulting means reassuring and supporting the client's proposed (or historical) approach to dealing with a situation. In acceptant consulting no new theories or solutions are suggested. Both the acceptant approach and the confrontation approach may be used along with the first two consulting approaches.

The last of these alternatives, catalytic (collaborative) consulting, fits best when the consultant is trying to work with local leaders, empower them, and leave them competent so they are not dependent on the consultant. In consulting, as in chemistry, the catalyst is an agent which, when added to other substances, causes a change in the speed of reaction but does not get used up in the process. This approach to consulting works best for non-technical topics and it works best when the consultant assignment is changing due to dynamic field conditions, including uncertainty.

The new division director and the consultant agreed on a collaborative workshop emphasizing participation rather than prescription. They agreed to avoid the prescriptive, expert, confrontational, or acceptant roles.

Leadership

Most writing on leadership refers to three styles of leaders: directive, democratic, and non-directive (Block, 1996; Hersey & Blanchard, 1972). These styles can be defined according to the following leader behaviors:

Directive

- Initiates
- Structures
- Motivates
- Delegates
- Praises
- Reprimands

Democratic

- Asks questions to involve others
- Leads discussion
- Tests to see if consensus exists
- Encourages others to take responsibility
- Confirms commitments

Non-Directive

- Fades out gradually
- Uses silence
- Gives non-verbal support
- Refuses to make decisions for others

Different situations require different styles of leadership. Evacuation of a burning building calls for directive leadership. Deciding among several suggestions for an organization's social event calls for democratic leadership. Helping qualified, experienced, enthusiastic committee heads calls for non-directive leadership.

Leadership will be most effective if a leader can look at a situation, decide what style of leadership is needed by the group, and act accordingly. When a leader is able to use each of the three leadership styles appropriately, this may be called **facilitator leadership** (Etling, 1975). A facilitator may, therefore, direct, use democratic leadership, or intentionally let the group provide its own leadership. The style used will vary according to the leader's formal role within the group, the size of the group, the skills and experience of group members, and the motivation and goals of group members. It will also depend on group maturity - the ability and willingness of group members to set goals and work toward the accomplishment of those goals. An effective facilitator leader will learn to quickly consider all of these factors and choose the best leadership style for the situation.

A comparison of the traditional directive leader and the facilitator leader is appropriate since most people in the United States, as well as Mexico, tend to equate leadership with the directive style of leadership.

Directive Leader

Leads from in front
Uses one style
Gives orders, makes statements
Focuses on leader's strengths
Person of action
Know-it-all
Says, "Don't just sit there, do something."

Facilitator Leader

Often leads from behind
Uses all three styles
Relies more on questions and suggestions
Focuses on group's needs
Sensitive, thoughtful person
Seeks help from others
Says, "Don't just do something, think about it first."

As skill increases a facilitator will be able to shift from a directive to a democratic to a non-directive style as appropriate. When the group is able to make decisions and take responsibility for its own concerns, the facilitator will be prepared to relinquish leadership and give attention to other opportunities. The new division director and the consultant agreed that facilitator leadership would be appropriate to meet the purpose of the workshop.

Content of the Workshop

As a part of the course taught at UDEM in 1995 the author had used a textbook, "Getting Results: A Guide to Effective Leadership", which he had developed at The Pennsylvania State University and translated into Spanish. The chapters of that textbook were:

1. What is your leadership style?
2. Habits and attitudes of leaders
3. Group identity and direction
4. Teamwork
5. Getting people to support your cause
6. Motivating people in volunteer groups
7. Speaking up for yourself
8. Teaching others
9. Resolving differences
10. Resolving conflicts
11. Moving from ideas to action
12. Managing projects
13. Making formal meetings work
14. Making informal meetings work
15. What's wrong and how to fix it

Each chapter includes background material on the topic, questions for group discussion, and

exercises for learning skills and applying them to community situations outside the classroom.

The new division director and the consultant had agreed to use this textbook for the workshop and concentrate on chapters three and four. A copy of the textbook was provided to each participant prior to the workshop.

Sequence of the Workshop

The new division director and the consultant agreed that they needed to assess participants' feelings about the new administrative structure, and get their suggestions as to the choice and sequence for the workshop. On the other hand, some structure was required to get started, and give the participants some basis for making choices. So, an agenda for the first day, Monday, was planned to give an overview of content options and get participant feedback. The agenda for Tuesday was left to be determined after evaluating participants' reactions to the first day.

Monday's session went according to plan. Meeting at 8:30 a.m., participants heard the new director describe the new administrative structure and explain how this workshop was designed to (a) foster teamwork, and (b) initiate a plan of work for the new unit. These were the suggested workshop goals. Participants were asked to interview and introduce a colleague that they did not know very well. One of the interview questions was, "how do you feel about the workshop goals?" Discussion after the introductions revealed that people were not clear about the new administrative structure but accepted it and were willing to work to accomplish the suggested workshop goals.

The consultant introduced the topic of teamwork, behaviors that contribute to team building, and types of teams typically found in a university setting. Participants were asked to rate their group (all workshop participants) in terms of their ability and willingness to operate as a team (see evaluation details in results section).

Next, participants were led through several small group exercises to help them identify their own leadership styles, set personal and professional goals for the next year, use self-management techniques, identify their expectations for the workshop, and evaluate the workshop content and process for the first day. Evaluation results indicated satisfaction with the workshop process and content. Participants rated themselves low as a team (see results section). The consultant and the division director determined the next day's agenda based on participant feedback.

Tuesday started with a report on the evaluations from the first day and the "expectations for the workshop" identified individually by participants. A major team building exercise was initiated. Four small groups were formed to design a logo to represent the new unit. The groups reviewed examples of logos from magazines. They discussed, debated, and drafted a design to show to the other groups. Lively participation resulted from this competitive exercise which lasted the rest of the morning.

During the afternoon session the director presented a draft mission statement for the new unit that had been written by an advisory committee to the Rector. Lengthy discussion resulted in contradictory viewpoints and some polarization of opinions. Workshop participants were clearly divided in their support of the mission statement. Participants expressed strong objections to different phrases in the mission statement. One of the participants volunteered to reconcile contradictory viewpoints in a new draft that he would present the next morning.

Wednesday started with his presentation. After some discussion and amendments, workshop participants enthusiastically approved the amended mission statement. The consultant then led a nominal group process to determine program priorities that would be consistent with the new mission statement. The priorities that resulted from the nominal group process were assigned to small groups formed according to

participants' interests. Each small group discussed one or two of the priorities and wrote plans for them that detailed activities, responsibilities, and deadlines. The plans were presented to the workshop assembly, then discussed and modified.

Thursday started with a discussion on implementation of the plans. Participants decided that they needed to address the issues of promoting the plans within UDEM, and fundraising to finance the activities. They were concerned as to how to delegate responsibilities for implementing the plans. They also wanted to discuss how to (a) recruit and work with volunteers, (b) resolve interpersonal conflicts, (c) organize orientation and inservice training sessions, (d) solve problems, and (e) evaluate results. The consultant provided mini-lectures

on each of these topics and cited additional information that could be found in the textbook.

On Friday, each small group presented its recommendations for the overall plan. Discussion was followed by individual expressions of commitment to implement the overall plan and to coordinate efforts with other individuals as they worked on their parts of the plan. Friday afternoon was devoted to a summary and evaluation of the workshop.

Results

The group rated the content and process of the workshop to be useful to them. Results of a questionnaire administered at the end of the first day (Monday) and again at the end of the workshop (Friday) are summarized below.

Workshop Evaluation

1. Please rate this workshop on the basis of the following criteria.

	Low	1	2	3	4	5	6	7	High
						Monday		Friday	
a. Participation						4.96		6.58	
b. Productivity						4.96		6.63	
c. Team Building						4.53		6.53	
d. Effectiveness of Consultant						5.37		6.63	
e. Consensus Building						5.37		6.28	
f. Interest and Cooperation						5.26		6.61	

2. What were the strong points of this meeting?

Monday

(26 comments included:)
 clarified workshop objectives -8
 clarified our integration -4
 introducing a colleague -2
 information on leadership -2
 participation -2

Friday

(36 comments included:)
 we worked as teams -8
 interesting work -4
 participation -3
 strengthened our integration -2
 our plan -2

3. What were the weak points?

Monday

(14 comments included:)
workshop direction was not clear -4
we sat down together with colleagues
from the same department -2
workshop was too informal -2

Friday

(15 comments, 11 of which
were "no weak points")

4. What improvement would you suggest?

Monday

more interaction -4
quiet people need to speak up -3

Friday

no improvements needed -7

A teamwork self-evaluation instrument was also administered Monday and again on Friday. The 13 criteria below were put on a wall chart. Each participant was given a red marker to indicate, on the chart, how the group scored on each of the criteria.

Teamwork Self-Evaluation

Evaluate how well this group is operating as a team. Rate each variable by marking under one of the numbers on the 1 to 7 scale. This will indicate how close you feel your group is to either extreme.

	Bad	1	2	3	4	5	6	7	Excellent
1. Intimacy and Respect									
2. Open Communication									
3. Listening									
4. Clear Objectives									
5. Mutual Support									
6. Consensus Decision-making									
7. Facilitative Leadership									
8. Fun									
9. Use of Members' Resources									
10. Mutual Trust and Confidence									
11. Conflict Management									
12. Involvement									
13. Flexibility									

The marks tended to cluster around 3 on Monday for all of the criteria. On Friday the scoring was repeated on a clean wall chart with a black marker. The marks tended to cluster around 6 at the end of the workshop. Since precise numbers were not circled, averages cannot be calculated. This fact is a problem in communicating results clearly in this paper, but it was very effective in demonstrating progress in a graphic manner for the workshop participants.

From these two evaluations the consultant concluded that the workshop goals were met. Six months later participants reported that they were still following their plan and that some of its objectives had been met.

Conclusions

The workshop was successful. The keys to the success of this workshop, and to acting as a collaborative consultant were the following: (a) thorough preparation for possible workshop topics must be tempered by flexibility in presenting those topics, (b) initial structure is necessary but it must be balanced by the needs of the participants, (c) options are necessary at each step in the workshop, (d) choice and sequence of the topics came from the needs of participants as they worked on workshop goals, (e) group exercises were important to allow group members to practice teamwork and program planning without having the outcomes determined in advance, and (f) use of workshop participants to present topics and to summarize group work helped bridge the gap between the local culture (including UDEM) and the experience of the consultant.

From this consulting experience and similar experiences of the author in Indonesia (Etling, 1977), Navajo Nation in 1983, Durango, Mexico in 1986, Costa Rica (Etling, 1991), and Puerto Rico in 1992 and 1994, the author developed and recommends the following list of principles to guide a collaborative consultant during various phases of a consultancy.

Preparation

1. Get as much background as possible on the situation.
2. Clarify my own values about education as they relate to the situation.
3. Anticipate issues and problems.
4. Prepare alternative approaches for resolving the issues and problems.
5. Review this checklist before working directly with the local group or community.

My Personal Value Positions

1. The learner should help determine learning objectives.
2. Educational efforts should increase the independence of learners.
3. Collaborative consultation efforts should encourage local initiative, self-help and innovation.
4. Collaborative consultation efforts should foster critical awareness to identify and analyze problems.
5. Collaborative consultation efforts should promote action to resolve problems.
6. Collaborative consultation efforts should emphasize common sense approaches as much as theoretical approaches.
7. Collaborative consultation efforts should have immediate and practical benefits to learners.
8. Collaborative consultation efforts should avoid excessive structure, programmed systems, and centralization.
9. Educators (community leaders) should treat learners (community members) as subjects, not objects.
10. Collaborative consultants should help find local solutions to local problems.

Introducing Myself

1. Start with an informal dialogue in a relaxed environment.
2. Establish credibility by showing interest, asking questions, and indicating preparations made to work with the group or community.

3. Invite community members to describe the situation, then clarify it by tactfully asking questions.
4. Accept the needs identified by clients as the starting point.
5. Establish myself as a collaborative consultant by:
 - a. dialogue on personal values
 - b. encouraging teamwork
 - c. modeling facilitator behaviors
 - d. emphasizing the problem rather than my expertise.

When I am Viewed as an Expert

1. Offer options not solutions.
2. Dialogue, explore alternatives.
3. Emphasize their expertise.
4. Demonstrate respect for others.
5. Build confidence in others.
6. Support their efforts to define or redefine the problem.
7. Question, listen and point out possible solutions from the answers.
8. Use nonverbal communication to support others.
9. Avoid paternalism and manipulation.
10. Keep the responsibility for solving the problem on the members of the group/community.

As the Situation Develops

1. Transfer leadership to others but share responsibility.
2. Transfer skills and information to make myself more dispensable.
3. Try to lower my own profile as time passes.
4. Observe local ceremonies, customs, and hierarchies while keeping the problems and values in focus and foremost.
5. Emphasize participatory and "hands on" discussion and learning.
6. Avoid "pulling rank" by using my titles or experience as a defensive or offensive weapon against those who disagree with me.
7. Suggest procedures that might be followed to gather more information.
8. Treat others as equals as much as possible - slightly more than the client is comfortable

with, but not enough to destroy communication.

9. Avoid taking myself too seriously.
10. Review this checklist occasionally.

Analyzing Alternatives

1. Consider the effects on all involved.
2. Check each alternative against personal value positions.

Post Mortem

1. Communicate problems/issues yet unresolved in a final discussion or by letter (preferably both).
2. Communicate confidence in community members to carry on.

Why are collaborative consultants desirable? In order to promote people's participation. Why is participation desirable? According to many authors (Ford, 1990; Kindervatter, 1977; Smith, M., 1989; Smith, R., 1991) people's participation is necessary for effective education programs and for community development.

In this century most of the world population has been deeply affected by colonialism, World War II, the Cold War, independence movements which have often been turbulent, and a period of regional wars and tensions. With few exceptions, world leaders during this time have used an authoritarian (directive) leadership style. Military leaders, political strongmen, and fundamentalist religious leaders have far outnumbered leaders like Gandhi and Martin Luther King. Even in newly independent nations the leaders have usually imitated the leadership style of colonial administrators rather than attempting participatory programs. Most decisions affecting people have been made "at the top" rather than at a "grassroots" level.

In times of turbulence and scarce resources, such a "top down" mode of decision making is understandable. Even in extension work, technology transfer and innovation have been consciously directed toward the "better-off" farmers who are the innovators and early

adopters. This approach, however, is being questioned. The Food and Agricultural Organization (FAO) of the United Nations held a global consultation in Rome in December, 1989, on the need to improve extension services. "The consultation found that the *trickle-down* theory of extension--that extension messages flow from the better-off to the poor--had *limited validity* " (FAO, 1990, p.17). The consultation concluded, "In many countries, the extension service will have to make greater efforts to adopt the participatory extension approach and mobilize farmers' and other community organizations" (FAO, 1990, p.17).

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THE CHANGING ROLE OF EXTENSION IN TECHNOLOGY TRANSFER

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Outstanding Research Presentation

This paper is one of five outstanding research papers from the Thirteenth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., April 4-6, 1997.

Abstract

This paper focuses on the changing role of extension in the transfer of technology, including emerging technologies that may have an impact on the capacity and effectiveness of developing country extension systems to meet the technology needs of their farmers, especially resource-poor farmers. As the private sector takes on more responsibility for technology transfer in the form of production inputs, the public extension system will have to focus on system-based, knowledge-intensive, and sustainable technologies that the private sector will be unable to provide. These technologies and others are described in the first part of the paper, followed by a discussion of their implications in terms of how national extension systems may need to realign their approach to technology transfer, including clientele, programs, and new institutional partnerships.

Changes in Agricultural Technology

The role of extension in technology transfer has changed substantially over the past four decades. Extension policies and approaches have not kept pace with the types of technology to be disseminated; at the same time, important worldwide differences exist. In large part, these changes in extension's role have been driven by new developments in agricultural technology and their application. For example, in the 1960s, the United States Agency for International Development (USAID) gave emphasis to building national extension systems. This strategy was built on the faulty premise that agricultural technology from North American and European research institutions could be directly transferred into less developed countries. Therefore, when the so-called Green

Revolution technologies emerged from the International Maize and Wheat Improvement Center (CIMMYT) in Mexico and the International Rice Research Institute (IRRI) in the Philippines, this development pointed to the need for further investments in agricultural research (Dalrymple & Srivastava, 1994; Hayami & Otsuka, 1994). Consequently, during the 1970s, many donors began investing in research systems that would generate technologies appropriate for the agro-ecological and socio-economic conditions of developing countries.

Green Revolution Technology

Green Revolution technology that emerged during the mid-sixties was a combination of high-yielding varieties (the genetic component),

plus a concomitant set of broad-based recommendations (crop management practices) that could be widely disseminated within an agro-ecological region. The high-yielding wheat and rice varieties quickly spread throughout Asia and beyond, but the complementary set of crop management practices diffused more slowly and unevenly, resulting in the inefficient use of production inputs. Therefore, the introduction of the Training and Visit (T&V) extension approach during the mid-seventies appeared well suited for disseminating these broad-based recommendations. By 1988-89, nearly 75 countries had adopted T&V Extension, due to the promotion and financial support provided by the World Bank (Swanson, Farner & Bahal, 1990, p. 48). Experience has shown that the T&V approach can effectively deliver general extension messages (Bindlish & Evenson, 1993, p. 29); however, its top-down management structure and inadequate technical capacity is not well suited to (a) the transfer of location-specific recommendations, (b) solving complex technical problems, and (c) disseminating system-based technologies, especially those associated with heterogeneous cropping systems in rainfed areas.

System-Based Technologies

Given the lack of progress in disseminating Green Revolution technologies into rainfed areas, starting in the late 1970s, some agronomists and rural social scientists turned their attention to Farming Systems Research (FSR). In theory, this approach was expected to strengthen research-extension-farmer linkages and to develop location-specific technology for more complex farming systems. In practice, researchers first described and then began improving different farming systems within an agro-ecological zone (AEZ), especially those cropping systems utilized by resource poor farmers in rainfed areas (Brush & Turner, 1987). In some cases, the focus was on intensifying existing farming systems, including interactions between crop and livestock systems. As a matter of practice, however, the more common pattern was to carry out on-farm,

adaptive research trials with the goal of developing more location-specific recommendations, especially for different socio-economic groups of farmers within an AEZ (Byerlee, 1994).

During the 1980s, considerable progress was made in developing FSR methodologies, particularly in carrying out on-farm, adaptive research trials (Byerlee, 1994; Preston & Leng, 1994). However, the diffusion of location-specific technology for most farming systems has not been widespread. This is due to several reasons, including (a) inadequate FSR capacity within most developing country research systems, (b) the relative high cost of conducting FSR, especially on-farm trials, during a period of declining research budgets, (c) the fact that interdisciplinary FSR is both difficult to implement and not highly valued within the scientific community, and (d) the difficulty of transferring these more complex technologies to different groups of farmers, many of whom have very limited technical knowledge and management skills.

Although research-farmer linkages were strengthened through FSR, especially through the use of rapid rural appraisals (RRAs) and on-farm, adaptive research trials, linkages between research and extension remain weak (Byerlee, 1994). One apparent reason for this “disconnect” is the widespread adoption of T&V Extension. As a matter of design, most T&V extension systems have inadequate numbers of subject matter specialists (SMSs). In addition, most SMSs have insufficient technical training and experience, especially in systems-based technologies. Consequently, the transfer of technologies resulting from farming systems, integrated pest management (IPM) and other types of systems-based research has been fairly limited (Byerlee, 1994).

Sustainable Technologies

The worldwide recognition of natural resource depletion and environmental degradation resulted during the 1990s in a growing concern for the development and transfer of sustainable

technologies (Byerlee, 1994). To some researchers, sustainable technologies imply the development and use of low input technologies that are in ecological balance with production outputs (Tansey & Worsley, 1995). For others, sustainable technologies imply the more intensive use of inputs, in combination with system-based technologies, including soil and water conservation, and other types of natural resource management (NRM) technologies. In the final analysis, continued population and economic growth will create an increasing demand for more and higher quality food outputs that will result in the expanded use of production inputs, and land and water saving technologies. Therefore, the challenge facing extension in the 21st century will be to disseminate sustainable technologies that will make more efficient use of land, water and production inputs, while maintaining the natural resource base over time.

Knowledge-Based Technologies

Most sustainable and/or system-based technologies, such as those emerging from FSR, IPM, and NRM research programs, are knowledge intensive. Therefore, farmers need higher level management skills and technical knowledge to successfully adopt these technologies. For this reason, better-educated commercial farmers have the capacity to more quickly incorporate these knowledge-based technologies into their farming systems, particularly if there are economic incentives to do so. The enormous challenge confronting the public research and extension system is how to develop and transfer these location-specific, system-based, and sustainable technologies to nearly one billion resource poor farmers; farmers who pose the most immediate threat to the natural resource base.

Given that system-based and sustainable technologies are both knowledge intensive and location-specific, it appears essential that national extension organizations stop functioning as top-down technology delivery systems that disseminate broad-based technical recommendations. Rather, extension needs to

emphasize farmer training that focuses on the development of technical knowledge and management skills. Such an extension system would concentrate on teaching crop, livestock, and farm management skills, including the technical knowledge necessary for the adoption of productive and sustainable technologies.

Precision Technology

The next decade will see the integration of farming systems and sustainable research in the form of precision farming technology that is rapidly gaining acceptance in North America. North American farmers use both Global Positioning Satellite (GPS) systems and Variable Rate Technologies (VRT) to accurately apply production inputs across each hectare of large farms. In short, the goal of precision farming is to accurately manage each part of a field based on actual need, rather than managing whole fields or farms based on average needs (Mangold, 1996, p. 40). While VRT has little direct relevance to most developing country farmers, other tools associated with precision technology, such as Geographic Information System (GIS) software, combined with periodic soil testing and adaptive research findings, appear directly relevant for application in most developing countries. For example, crop management researchers and subject matter specialists can work together, using a combination of recently developed computer software programs (GIS/yield mapping software), adaptive research findings, and soil test results from farms within a recommendation domain to more accurately specify input levels for different cropping systems within an AEZ. In fact, it would be technically feasible and economically viable for farmers with less than one hectare to get precision recommendations for the different crops within their farming systems. In short, precision technology has the potential of enabling different types of farmers to gain more accurate management control over production input use and, thereby, increase the production efficiency of their cropping systems. The aspect of precision technology that appears most relevant to developing countries is the use of comprehensive soil test results, on-farm

research findings, and GIS/yield mapping software to develop site-specific management recommendations for both individual and groups of farms within different recommendation domains of an AEZ. Although decisions about the most appropriate variety or hybrid might be specified for each recommendation domain, the plant population, soil nutrients, and agro-chemicals to be applied can be more accurately specified for each hectare of a farmer's field, given a particular yield target.

Precision technology is also more ecologically friendly, because it adjusts input use to reflect both soil type and crop requirements. For example, farmers can avoid using too much fertilizer and/or agro-chemicals on lighter soils and inputs that might leach into underground aquifers or find their way into streams and reservoirs downstream. Furthermore, by replenishing soil nutrients based on crop output data and periodic soil tests, farmers can avoid long-term soil nutrient mining - a serious problem in many Asian countries.

Finally, farmers can decide whether they want to maximize income at a higher level of risk, or pursue a more conservative yield target with less risk. Therefore, precision technology allows farmers to make informed economic decisions about input use, while reducing long-term environmental degradation. Combined with IPM and NRM technology, precision technology appears to be a logical step toward helping farmers adopt or utilize more cost-effective, intensive, and sustainable technology.

Vertically Integrated Systems

A long established approach to technology transfer that is taking on renewed importance in this period of trade liberalization is the use of vertically integrated systems for high value commodities within some countries. These systems operated successfully from the mid-19th to the mid-20th century as colonial governments exploited the natural resources and cheap labor in many developing nations to produce high value commodities, such as tea, coffee, sugar, and cotton, to meet the requirements of the

colonial nation. These vertically integrated production, processing and/or marketing systems are demand driven. However, worldwide competition for specific markets, rather than a colonial government, will now determine the winners and losers. Those countries with the comparative advantage, including agro-ecological conditions and efficient production technologies, along with processing capacity and/or marketing arrangements, will eventually dominate these growing export markets.

Developing countries, with relatively cheap agricultural labor, have an important advantage in penetrating rapidly expanding export markets that can both generate foreign exchange and increase farm income. In addition, many high-value commodities are labor intensive and have the potential for value-added employment. Therefore, nations need to pursue policies that will encourage their farmers to diversify into those high value commodities where they have a comparative advantage. In some cases, the initial research and development (R&D) work might be carried out by the national research system (Jarvis, 1994). However, in most cases, private companies are more effective in establishing these vertically integrated systems.

First, private companies better understand the demand structure for different products, especially export markets in Europe, North America and East Asia. Second, private sector firms are more efficient in establishing the necessary processing capacity and/or market arrangements to exploit this export market demand. Third, these companies are better able to organize a more comprehensive technology transfer system, including input supply, credit, and "contract extension" to ensure that participating farmers utilize the recommended production technology. And, finally, companies are prepared to finance the cost of establishing these vertically integrated systems, including most research and extension costs.

Implications for Extension Systems

Intensifying and Diversifying the Farming Systems of Resource Poor Farmers

To more effectively address the food security issue and the need to achieve broad-based, sustainable agricultural development, the technology and educational needs of small farm households must be more adequately addressed. Targeting resource poor farmers with appropriate technology offers an important opportunity for rural households to increase their productivity and incomes, and to slow rural-urban migration. Also, targeting this vast group of low resource farmers can increase efficient use of the land, labor, and capital resources within rural areas.

The most effective means of bringing small and marginal farmers into a market economy and increasing their farm income is to help them intensify their farming systems and/or diversify into high value crop or livestock enterprises. These modifications must (a) be appropriate for the agro-ecological and natural resource conditions of the area, (b) reflect the resource endowment of predominant farm households, and (c) anticipate new and/or expanding market opportunities, including agro-processing. Assisting large numbers of resource poor farmers to intensify and diversify their farming systems will require an interdisciplinary team approach, with an appropriate mix of research and extension specialists, who can work together to assess, validate, and transfer more productive farming systems and sustainable technologies to different socio-economic groups of farmers.

On the other hand, if governments leave research and technology transfer largely to the private sector, large-scale commercial farmers will be the primary beneficiaries, resulting in larger and more capital and energy intensive crop and livestock systems. In the process, resource poor farmers will be further marginalized, leading to accelerated environmental degradation, deteriorating socio-economic conditions, and rapid rural-urban migration.

Developing and Transferring Sustainable Agricultural Technologies

As the private sector takes more responsibility for production inputs, the public technology system will need to allocate more resources to those technologies that will result in sustainable agricultural development. These technologies include those management practices and systems that will increase production efficiency, yet conserve the nation's soil and water resources. These technologies range from improved conservation tillage practices to new farming systems that will maintain soil, water and other natural resources. As noted earlier, IPM is an example of a sustainable technology that can reduce crop protection costs and minimize the use of agro-chemicals. IPM technologies are urgently needed since agro-chemicals can threaten the health of farmers, the safety of a nation's food supply, and contribute to long-term chemical degradation of a country's soil and water resources. (Roling & Pretty, 1997).

In most Asian countries, such as India, further expansion of irrigated agriculture will be limited. Therefore, there is an urgent need to improve soil and water management practices to reduce waterlogging and salinization (knowledge-based technologies), and to improve water use efficiency that will help conserve each nation's water resources. In addition, more attention is needed to improve the productivity of rainfed agriculture, through improved watershed management and tillage practices. Finally, soil erosion and soil nutrient mining are having a serious long-term impact on the land resources of many countries. Therefore, farmers need to be trained in appropriate soil, water, and crop management practices that will reverse these long-term trends. Furthermore, the public research and extension system will need to allocate more resources to these sustainable technologies that will not be developed and disseminated by private sector companies.

Emphasizing Technical Knowledge and Management Skills

As noted earlier, both system-based and sustainable technologies are knowledge-intensive. Therefore, to achieve farmer acceptance and adoption, farmers will need to increase their technical knowledge and management skills. In the future, extension should move beyond the simple dissemination of broad-based recommendations, currently being disseminated through approaches such as T&V Extension. The importance and value of sustainable technologies may not be readily apparent to farmers. Therefore, extension will need to organize educational programs that will explain the rationale and importance of these technologies, as well as the management practices necessary to adopt these technologies. In addition, appropriate government policies, including the regulation and pricing of water used for agricultural production, as well as incentives to encourage the adoption of soil and water conservation practices, can help support the dissemination of these sustainable technologies.

Location-Specific Technologies

The lack of research personnel who can carry out on-farm, adaptive research trials, and competent crop management specialists who can help refine agronomic practices, is a serious obstacle to increasing the productivity of major cropping systems within each AEZ of developing countries. To increase the efficiency and effectiveness of scarce research and extension personnel at the district or sub-regional level, selected precision technology tools could be utilized to help generate site-specific recommendations. To do so, the first step might be to differentiate a district into major AEZs and sub-zones. Next, using participatory rural appraisal techniques, a strategic research-extension plan for the district could be developed. The research dimension of this plan would outline a series of adaptive research trials to be carried out across different cropping systems within each AEZ. These on-farm trials would be complemented with a systematic (grid) soil testing program to be carried out across each AEZ, using low-cost GPS technology. The results of these trials and

tests would then be accumulated and analyzed using GIS software to generate information on plant nutrient availability and yield response data within each sub-zone. By following a systematic program of multi-year trials, and developing soil test data across each AEZ, it should be possible within five years to generate location-specific findings for the major crops and cropping systems within a district or sub-region. These findings, along with the resulting GIS maps, could be used in training the extension field staff about location-specific recommendations to be disseminated to different groups of farmers and villages within their service area.

Organizing Farmers Into Groups

Most extension organizations in developing countries have done little to help farmers organize into functional groups, such as farmer or commodity associations, or use existing groups to enhance technology dissemination and feedback. To create a demand-driven technology system it is necessary to directly involve farmers in identifying problems, establishing priorities, and carrying out on-farm research and extension activities. The most effective mechanism in enabling farmers to become more effective partners in a national technology system is to help organize them into farmer associations (FAs). The experience of successful FAs in Asia, Europe and North America is that they must be voluntary organizations, organized around a specific commodity and/or support service, and they must be controlled by the members with the goal of increasing farm incomes and improving the living standards of participating households (Chamala & Shingi, 1997).

Creating New Institutional Partnerships

To meet the growing demand for food, and to sustain the natural resource base during a period of declining public investment in research and extension, new institutional partnerships will be essential. The publicly financed research system needs to cooperate with, rather than compete against, private R&D firms. Private

sector firms have the resources and comparative advantage to develop, produce and distribute different types of proprietary technologies, such as improved varieties/hybrids and agro-chemicals. In the process, the development, production and transfer costs of these proprietary technologies can be passed along to farmers and ultimately to consumers. Therefore, the private sector component of a national technology system is generally sustainable.

NGOs are becoming important in many developing countries and are a valuable resource in helping farmers to get organized into functional groups. It is in the direct interest of both research and extension to work with NGOs in helping farmers organize into different types of FAs (Farrington, 1997). These FAs, in turn, can provide invaluable feedback to both research and extension in terms of problem identification, priority setting, program implementation, and evaluation. In the process, farmers and their FAs can provide invaluable policy support to maintain and even increase public investment in research and extension.

Conclusion

The expanding worldwide demand for food, combined with the land and water resource constraints faced by many countries, will require increased investment in agricultural research and technology transfer. Much of this new investment will come from the private sector and will be directed toward the development and transfer of proprietary technologies, including genetic, chemical, biological, and/or mechanical inputs. In this emerging institutional milieu, the public sector must concentrate its research-extension investments on serious socio-economic and resource management problems; problems that will not be addressed by the private sector. In particular, they should concentrate on those knowledge and system-based technologies that will enable resource poor farmers to increase their productivity and incomes through more intensive and diversified farming systems. This strategy will help reduce rural hunger, poverty and the socio-economic

costs of rapid rural-urban migration. The public sector must also take primary responsibility for developing and disseminating sustainable technologies that will maintain the natural resources of each country.

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