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). Subscriptions should be made payable to AIAEE and mailed to Dr. Jan Henderson, Department of Agricultural Education, 204 Agricultural Administration Bldg., 2120 Fyffe Road, Columbus, OH 43210.
Journal of International Agricultural and Extension Education

Volume 4 Number 1 Spring 1997

Editorial Board ........................................................................................................................................... 2

From The Editor ........................................................................................................................................ 4

FEATURES
Institutional Arrangements in Agricultural Education, Extension, and Research: Lessons for International Development
Lindsay Falvey & Douglas Forno ................................................................................................................ 7

The Emerging Role for Agricultural Education in Producing Future Researchers
Lindsay Falvey & Charles Maguire ........................................................................................................... 15

Accuracy, Congruency and Agreement Among Researchers, Extension Workers and Pigeon Pea Farmers in Trinidad and Tobago
David Dolly ........................................................................................................................................... 21

Educational Impacts of the Training and Visit Extension System (T&V) on Small Farmers in the West Province of Cameroon
Isaac R. Tchouamo & Roger Steele ........................................................................................................ 31

A Comparative Study of Farmers’ Participation in Two Agricultural Extension Approaches in Tanzania
Mohammad Douglah & Nicodemus Sicilima ............................................................................................ 38

Burnout, Job Satisfaction and Work Situations as Perceived by District Extension Officers, Ondo State, Nigeria
Robert Agunga, Christian Ojomo & Seung Il Na ................................................................................... 47

Building Linkages with Students: Internationalization of the Curriculum as Perceived by Undergraduates in the College of Agriculture, Iowa State University
Sherry Sammons & Robert A. Martin ......................................................................................................... 57

COMMENTARY
International Agricultural Consultants: A Perspective
James E. Diamond ....................................................................................................................................... 65

Rural Socio-economic Changes in India: Implications for Agricultural Extension
Rama Radhakrishna ...................................................................................................................................... 73

TOOLS OF THE PROFESSION
European Journal of Agricultural Education and Extension
Cathy H. Hamilton ....................................................................................................................................... 80
Editorial Board

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

U.S./Canada Representatives

Satish Verma, Editor
Head, Personnel and Organization Development
LSU Agricultural Center
P.O. Box 25100
Baton Rouge, LA  70894-5100
Ph. 504/388-6194
Fax 504/388-2478
SVERMA@AGCTR.LSU.EDU

Jack Elliot, Past Editor
Associate Professor
The University of Arizona
Department of Agricultural Education
224 Forbes
Tucson, AZ  85721
Ph. 602/621-1523
Fax 602/621-9889
ELLIOT@AG.ARIZONA.EDU

Jan Henderson
Associate Professor
The Ohio State University
Agricultural Education Department
204 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH  43210-1067
Ph. 614/292-0450
Fax 614/292-7007
HENDERSON.1@OSU.EDU

James Long
895 Sable Drive
Roseburg, OR  97470
Ph. 503/673-3713
JLONG@USERS.WIZZARDS.NET

Barbara G. Ludwig
District Director
The Ohio State University Extension
1680 Madison Avenue
OARDC Administration Building
Wooster, OH 44691
Ph. 330/263-3831
Fax 330/263-3667
LUDWIG.2@OSU.EDU

Rama Radhakrishna
Research Associate
The Pennsylvania State University
323 Agricultural Administration Building
University Park, PA  16802-2601
Ph. 814/863-7871
Fax 814/863-4753
RRADHAKR@PSUPEN.PSU.EDU

John Richardson
Extension Program Delivery and Accountability Leader
North Carolina Cooperative Extension Service
Department of Agricultural and Extension Education
Box 7607
N.C. State University, Raleigh, NC 27695
Ph. 919/515-2380
Fax 919/515-1965
JGRICHAR@AMAROQ.CES.NCSU.EDU

World Region Representatives

Ruth Beilin
Faculty of Agriculture
Forestry and Horticulture
Burnley Gardens, Yarra Boulevard
Richmond, Victoria 3121
Australia
Ph. (61) 3 9810 8859
Fax (61) 3 9819 1383
BEIDAM@MPX.COM.AU
Shankariah Chamala
The University of Queensland
Brisbane, Qld 4072
Australia
Ph. (07) 365 2165
Fax (07) 365 1177
AGBM@DINGO.CC.UQ.OZ.AU

Edward Ruddell
Area Representative for Peru, Bolivia
World Neighbors
Casilla 20005
Santiago 20 Chile
Ph. (56) (2) 217 1154
Fax (56) (2) 217 1154
VECINOS@IACTIVA.CL

William R. Seiders
Ag Ext and Training Officer, Rural Youth
FAO, SDR Division (D 404)
Viale delle Terme di Caracalla
00100 Rome, Italy
Ph. 39-6-5225-3615
Fax 39-6-5225-3152
WILLIAM.SEIDERS@FAO.ORG

Moses Zinnah
Coordinator/UCC SAFE Project
Winrock International
University of Cape Coast
Department of Agricultural Economics and
Extension
Cape Coast, Ghana
Ph. 233-42-33780
Fax 233-21-773467
ZINNAHWI@NCS.COM.GH

AIAEE 1996/97 OFFICERS

Barbara Ludwig, President
District Director
The Ohio State University Extension
1680 Madison Avenue
OARDC Administration Building
Wooster, OH 44691

Jan Henderson, Treasurer
Associate Professor
The Ohio State University
Agricultural Education Department
204 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH 43210-1067

Jack Elliot, President Elect
Associate Professor
The University of Arizona
Department of Agricultural Education
224 Forbes
Tucson, AZ 85721

Edgar Persons, Member at Large
Director
Center for Education in Agriculture and
Extension
University of Minnesota
1954 Buford Avenue
St. Paul, MN 55108

Roger Steele, Past President
Professor
Department of Education
Kennedy Hall
Cornell University
Ithaca, NY 14853

Remileku Rakey Cole
Graduate Student Representative
Department of Human Service Studies
MVR Hall
Cornell University
Ithaca, NY 1485
From the Editor

In This Issue

The articles in this issue offer interesting author perspectives and research findings, and abstracts chosen from the European Journal of Agricultural Education and Extension.

Two articles by Falvey (co-author) at the front of the features section focus on agricultural knowledge systems (AKS) from an organization and an asset management dimension. In the first article, Falvey and Forno maintain that organizational arrangements are a mix of history and circumstance-suited rationalizations. They describe two common management and fiscal systems of agricultural research, education and extension found in the world - the integrated system typified by US land grant colleges, and the segregated system in less developed countries wherein research organizations are often separated from universities and extension agencies. The authors contend that better linkages need to be forged in the latter system and suggest strategies for doing that. The second article by Falvey, co-authored with Maguire, focuses on the research component of AKS, and highlights the need to ensure a continuous supply of well-trained researchers as a fundamental human resource asset. They maintain that useful mechanisms to foster linkages between universities training future researchers and research institutions in less developed countries is critical to fulfilling this need in an appropriate manner. The authors suggest that such mechanisms may be found in more developed countries which have institutionally separated systems rather than in the institutionally integrated US land grant system.

Five research studies from different regions of the world also included in the features section deal with specific aspects of AKS functioning.

From his research in Trinidad and Tobago in the Caribbean, Dolly finds that extension workers and farmers are closer in their views of a new pigeon pea cultivar's attributes than either of them are to researchers, and recommends integrated, interactive involvement of researchers, extension workers and farmers in the effective development, transfer and use of this technology.

Three studies focus on extension in Africa. Two studies assess the effectiveness of the Training and Visit Extension System (T&V), the third study documents extension administrators’ views of their job.

Tchouama and Steele report rather discouraging results of five years of T&V implementation in the West Province of Cameroon, and recommend replacing it with a more participatory approach that would facilitate joint problem solving and farmer-to-farmer sharing of expertise and resources. Douglah and Sicilima compare the government-sponsored T&V and the NGO-based Sasakawa Global 2000 extension approaches in Tanzania to find that neither approach employed genuine farmer participatory practices in programming activities. Agunga, Ojomo and Na find that despite adverse economic and working conditions, and feelings of frustration and stress, middle-level district extension administrators take pride in and derive social status and prestige from their job.

Shifting focus to the U.S., Sammons and Martin add to our knowledge of the theme of internationalizing college agricultural curricula, a topic that continues to interest agricultural and extension educators and our association. From the undergraduate students' perspective, the authors find support for the idea, identify significant barriers to progress, and make several recommendations, including internationalizing existing courses, encouraging students to participate in international activities, and getting faculty to become more global in their teaching.
In the commentary section, Diamond provides his thoughts on the implications of consultancy in international agricultural development and makes interesting and useful suggestions for both the neophyte and the experienced consultant. In the second commentary article, Radhakrishna uses census data and published literature to describe rural socio-economic trends and changes in India in the last four decades. He suggests that agricultural extension will have to respond through programs focused on issues arising from land fragmentation, subdivision and consolidation, and a multi-disciplinary orientation to problem-solving.

In a collaborative arrangement with the European Journal of Agricultural Education and Extension (EJAEE), the Tools of the Profession section will carry from time to time abstracts of selected articles from that journal to complement our material. We begin this collaboration with five abstracts chosen from EJAEE which expand upon this issue's themes of globalization, agricultural knowledge systems, extension and participation. EJAEE will reciprocate by featuring articles from our journal. We believe this arrangement will benefit the readership of both journals.

Ed Ruddell has worked with World Neighbors, a non-governmental organization, in Bolivia for over 25 years. In 1989, Ed was inducted into the Order of Education by the Government of Bolivia for his many years of service to that nation. He represents Central/South America on the editorial board of the journal. Ed attended the World Food Summit in Rome, November 11-16, 1996, and shares this report of significant things that happened at the summit. You are invited to give your experiences of the summit, if you attended, or your views on the summit, and underlying issues of population, food and hunger, and poverty, which continue to face humanity. In this way we can generate a continuing dialogue in the commentary section of the journal based on your experiences, views and opinions on this critical topic. The editorial board hopes you will contribute.

**World Food Summit**

by Ed Ruddell (World Neighbors-Andean Area)

Leaders from 186 nations participating in the World Food Summit pledged their “political will and common and national commitment” to halve the number of hungry people in the world by the year 2015. Characterizing the current figure of 800 million malnourished people in the world as “intolerable”, the “Rome Declaration” was approved by summit participants as a non-binding document. The declaration cites barriers preventing basic food needs from being met, and calls for urgent, determined and concerted action, particularly in light of anticipated increase in the world's population and stress on natural resources.

In the declaration's plan of action, the objective of technology transfer and use, skills development and training to enhance food security is important for AIAEE. The plan envisions that governments, in partnership with “all actors of civil society”, will (a) strengthen agriculture, fisheries and forestry education, skills development and extension systems, (b) promote viable technology transfer that meets local needs, and (c) promote means to reduce women farmers' workload.

World Bank President Hans Wolfensohn in his speech to the summit said “...food production and rural well-being are not peripheral, we must place them at the center of the national and international agendas.” He committed to reverse the decade-long decline in the Bank's support for agriculture and rural development. “We are taking action, and we are taking it now”, he pledged.

An NGO forum, attended by 1,200 organizations from 80 countries, forwarded to the summit the following recommendations to enhance food security: (a) strengthening capacity of small producers, women and youth, local and regional food systems, (b) redressing negative effects of concentrated wealth and power, (c) modeling agriculture and food production systems on agro-ecological principles, (d) strengthening and
deepening participation of civil society (people) at all levels, (e) guaranteeing by international law the right to food, and (f) vesting in governments and states the prime responsibility for ensuring food security.

FAO published three volumes of technical papers presented at the summit on 15 topics dealing with various aspects of food security, including socio-political and economic environments, population growth, nutrition, marketing, processing and distribution, trade, research, and environmental protection.

FAO Director General Jacques Diouf was critical of world governments’ acceptance without compunction of reduction in the budget of the United Nations even as that organization strives to enhance food security and reduce malnutrition. On November 13, 1996, the International Herald Tribune remarked “The tools to end poverty and hunger exist. What is needed is the political will to use them.”

The admonition of Mahatma Gandhi is wisdom itself: “Recall the face of the poorest and weakest man whom you have seen and ask yourself if the step you contemplate is going to be of any use to him. Will it restore to him control over his life and destiny”? Only then will the world be better prepared to welcome the anticipated 3.3 billion newcomers to our global village by the year 2025.
INSTITUTIONAL ARRANGEMENTS IN AGRICULTURAL EDUCATION, EXTENSION, AND RESEARCH: LESSONS FOR INTERNATIONAL DEVELOPMENT

Lindsay Falvey, Dean
Faculty of Agriculture, Forestry and Horticulture
The University of Melbourne
Parkville, Melbourne, Australia
61-3-93445029
61-3-93482156 (fax)
l.falvey@agriculture.unimelb.edu.au

Douglas Forno, Chief
Agriculture Technical Division
The World Bank
1818 H Street NW, Washington, DC
(202) 473-9406
(202) 334-0473 (fax)
dforno@worldbank.org

Abstract

Agricultural research, education and extension are often organized in separate institutions in less developed countries. Many developed countries also have institutionally separated systems, but have evolved mechanisms to effect coordination among these integrally related fields. Development projects in less developed countries have, in many cases, assumed that it is possible to base projects on an institutionally integrated model such as the US land grant college system wherein teaching, research and extension functions are integrated. Experience indicates that this approach is costly and unlikely to succeed in the long term. Each country has its own organizational needs which should be considered in the design of assistance projects related to agricultural knowledge systems.

International Development Assistance in Agriculture

This paper examines the nature of major international development projects supporting agricultural research, education and extension from the viewpoint of relevant institutional systems of governmental agencies. It considers improvements in the process of preparing projects to acknowledge institutional differences, and to support the integrity of agricultural knowledge systems which have evolved in most of the more developed countries. Specifically, the paper discusses institutional arrangements which incorporate universities into research and extension projects according to the requirements of each situation.

Agricultural and natural resources have been and continue to be a major focus of international development assistance agencies. This focus appears to ignore the inter-relationships which create a viable agricultural knowledge system in which the interactions between research, teaching and extension are acknowledged through organizational and funding arrangements (Falvey, Forno & Srivastava, 1995). For example, diffusion of information has mainly focused on the mechanism of extension, narrowly defined in one case as the transfer of agricultural information to enhance the productive capacity of farmers (Umali & Schwartz, 1994). Such a narrow definition may have affected the impact of so-called extension activities supported by international development agencies.
The largest world-wide lender in agricultural research, teaching and extension over the past 30 years has been the World Bank. The largest donor has been the United States Agency for International Development (USAID) although AID funding has declined significantly in recent years. Both of those initiatives have contributed to the United States of America attracting about one-third of the persons in this field from less developed countries who study abroad - around 5,000 agricultural graduates per year (Lele, 1995).

The overriding observation of World Bank investment in agricultural research and extension since the mid 1960s is that it has not been organizationally linked to universities and agricultural education (World Bank, 1994). In the 1970s, the Bank invested $750 million in research and/or extension in 27 projects in 13 countries. An additional $375 million in the research and extension components of 312 projects in 80 countries was also invested. In the 1980s, investment increased to about $1.7 billion in 38 countries, and over $3 billion in over 400 projects. The focus in the 1990s has shifted to national agricultural research systems and their links to the Consultative Group for International Agricultural Research (CGIAR) centers, with the role of universities limited to one of contract researchers. Extension projects have assisted the creation of separate extension departments which may have exacerbated the separation of components of the agricultural knowledge system (Zijp, 1996).

**World Bank Involvement in Agricultural Higher Education**

World Bank projects involving higher education have focused more on institutions than on issues relating to the agricultural education sector. Lending has been limited by a general premise that the returns from primary and secondary education exceed those of higher education (Psacharapoulos, 1994). Consequently, an average of only 17% of total World Bank education lending over the period 1963-1994 has been for higher education in agriculture. Agricultural project lending has emphasized construction and equipment over human resource development, the latter having received only $715 million of the total project cost of $2.84 billion over the period 1964-1990 (World Bank, 1994). Ambivalence toward lending for education (World Bank, 1992) has arisen from the experience of projects in the 1980s which failed to acknowledge the role of education in the agricultural knowledge system or the special needs of particular countries. This has led to a general decrease in lending for agricultural education.

Investment in higher education appears to have been based on the premise that an educated society is better prepared to make objective decisions concerning its development by providing an environment where social and cultural change can occur more readily (Ransom, Khoo & Selvaratham, 1993). Without detracting from this sentiment, it appears that the World Bank may have undervalued the potential benefits of higher education as a component of a dynamic agricultural knowledge system in conjunction with extension and research. A labor planning approach to agricultural higher education (World Bank, 1992) has further diverted attention from interactions with research and extension. Continued World Bank concern about the availability, generation and diffusion of new agricultural technology in Asia (Antholt, 1994) highlights an opportunity to reassess approaches to agricultural education lending.

World Bank experience in higher education, including agriculture, provides useful guidelines for future lending. Ransom et al. (1993) highlight the need for training in centers of excellence, realistic salaries, foreign faculty in the short term, accessing private and government talent, and joint research and training involving the private sector, universities and international agencies. Other lessons learned are ensuring equity of access, mission-oriented institutions, fostering private institutions, cost sharing and student fees and loans, transparent resource allocations, and institutional autonomy over student numbers and resource use. Perceived difficulties in
assisting the development of agricultural higher education in less developed countries may be based on flawed assumptions concerning institutional arrangements in those countries.

**Institutional Arrangements**

Johnson (1989) has indicated that organizational limitations are the primary constraining factor in agriculture in less developed countries. Oram (1993) states that strengthening of the institutions supporting agriculture is a critical precursor to economic development. Consideration of the institutional or organizational arrangements of more developed countries is instructional in this respect. Two general institutional arrangements have evolved in more developed countries to manage the agricultural knowledge system. The systems can be categorized as:

1. Institutionally separated with cross linkages, such as in Australia, Canada, New Zealand and England.

2. Institutionally integrated, such as the US land grant universities and the institutions of Scotland and Northern Ireland.

Institutionally separated systems arise from separate lines of authority for education, research and extension. Such systems are commonly based on one ministry governing applied agricultural research and extension (often combined with regulatory and other functions) and a separate ministry responsible for universities which conduct instruction and research. This separation is duplicative, costly of financial and human resources, and insular, unless functional linkages are institutionalized. Informal links are encouraged and contribute significantly to the working of these systems but are not sufficiently durable under conditions of continuous change (Falvey et al., 1995).

The most common approach in institutionally separated systems is the establishment of cooperative research mechanisms with some core funding for research operations as a means of uniting related disciplines and scientists. Figure 1 describes the mechanisms developed in Australia, Canada and New Zealand. Such mechanisms must be regularly reviewed to ensure their continued relevance. Incomplete funding is also favored to maintain focus on required applied research and stimulate the seeking of competitive research support from various sources. Control and accountability in this approach are increasingly tied to new funding flows.

Cooperative mechanisms focus mainly on research. This parallels the use of the research function as the primary integrator in the institutionally integrated system. Researchers are also educators, and benefits are seen to flow from research to instruction through the continued creation of knowledge. A focus on applied research and a requirement to demonstrate applicability of research results provides the basis for dissemination of new information (Falvey & Bardsley, 1995). The poor linkages between teaching and extension create difficulties for extension in justifying activities separate from the research and teaching components of the knowledge system. This has contributed to cut-backs in extension funding in most countries adhering to this system.

Institutionally integrated systems are based on funding of universities for research, teaching and extension from more than one source. US land grant universities (Figure 2), for example, account for funds separately while managing the activities of research, teaching and extension through staff appointments to perform multiple functions. The flow of information from research to instruction and extension is effected through the same persons conducting two or more functions. This helps maintain a client focus in research, teaching and extension activities. The link between teaching and extension is maintained through extension being conducted in
Cooperative Research Mechanisms in Institutionally Separated Systems

Arrangements which aim to effect coordination of research, education and extension in institutionally separated systems have been developed in several countries although all have focused on research coordination in the first instance and have been formed in an environment of public expenditure reductions (Falvey, Forno & Srivastava, 1995).

In Australia, Cooperative Research Centers (CRCs) have been created in selected fields through grants to effect coordination. Staff participating in CRCs continue to be employed by their own organizations and remain located in their original offices and laboratories in the main. The research activities of public bodies, including the national organization (Commonwealth Scientific and Industrial Research Organization), state departments of agriculture, and universities have been combined for those areas that are relevant to the CRCs. Private sector interest in the outcomes of and financial contributions to research form key criteria in the selection of proposals to form CRCs. The link to education is strengthened by university staff participation in the CRCs.

Canada has established partnerships between universities and research bodies involving federal and provincial agencies and budgets.

New Zealand has reorganized institutionally to create Crown Research Institutes (CRIs) as single foci for research. Universities are admitted to the CRIs about one year after the creation of the CRIs, and the privatizing of extension and some research services.

Coordinating mechanisms are commonly used as new funding channels to stimulate redirection of activities, and to shift control of the research agenda from researchers to research and development planners, including the private sector.

Figure 2

U S Land Grant Universities: An Institutionally Integrated System

Land grant universities are institutionally integrated organizations which manage the functions of research, education and extension related to agriculture in the US. These universities were founded or extended with assistance from federal lands granted to states through the Morrill Act of 1862, which provided land tracts as an incentive to establish college programs in scientific, agricultural, industrial and military studies. States applied grants to either single or multiple institutions. Land grant colleges were to provide technical education for the poor and remote rural dwellers of each state. Most colleges offered curricula broader than the act required and awards generally went to public institutions.

The Second Morrill Act of 1890 enabled states practicing racial segregation to establish black land grant colleges. In 1994, Native American colleges were added to the category of land grant colleges (NASULGC, 1995).

Funding for colleges was initially for classroom education. Funding for research and extension was legislatively appropriated in 1887 (Hatch Act) and 1914 (Smith-Lever Act), respectively, and led to the current, widely held belief that the colleges had a mandate to integrate research, education and extension. Today, funding sources for core activities include county, state, and federal levels of government, with counties supporting large proportions of the cost of extension services in many major agricultural producing states. While commonly perceived as predominantly funded by state budgets, this is no longer the case in many states, and both federal and state contributions appear to be declining. Structures for the management of functional integration vary, yet are common in their integration of research, education and extension (Young & St. John, 1993).
the same institution as formal education, and the offering of non-credit courses by teaching staff and others as an educational outreach activity. The distinction between teaching and extension is less well defined in this model (Falvey & Bardsley, 1995).

The World Bank and USAID have supported projects in less developed counties that are based on the institutionally integrated model, striving to reproduce land grant style institutions. However, the governmental structures of these countries, more often than not, separate teaching from extension, with research being split between at least two agencies. Such systems conform more to the institutionally separated model.

The experience of the World Bank and USAID in applying the land grant university model in less developed countries, which dates back to the 1960s, indicates that inadequate attention was given to the differences between the institutional arrangements of less developed countries and the US. Such differences include the importance of three levels of government funding (federal, state and county), strong internal management, and the multiple appointment system for integration of functions. In addition, the environment which fostered the development of land grant universities in the US is not easily reproduced. That environment included such factors as favorable price interventions by states, a largely literate, politically vocal and landed rural population, and wide availability of agricultural support services, including input supplies, credit and technical packages (World Bank, 1992).

A brief comment on the outcomes of projects based on the introduction of land grant style institutions in less developed countries is instructive. Successes have been documented. For example, in India, a parallel university system of state agricultural universities was established largely with USAID support (Easter, Bisaliah & Dunbar, 1989). Busch (1988) notes the high cost of establishing that system but provides little indication of the concern raised a few years later in a World Bank review regarding inappropriate institutional culture, inadequate management and administration, and low academic standards associated with declining funding and poor employment prospects for graduates (World Bank, 1995). A separate review of World Bank and USAID involvement in agricultural higher education support stated that the land grant model was not fully absorbed by any of the countries (World Bank, 1992). Johnson and Okingbo (1989) also expressed the frustration experienced from introducing the model in an unsuitable institutional environment. An alternative approach in which existing institutional arrangements were acknowledged and utilized was found to yield benefits. Chaudry and Al-Haj (1985) indicate how in Taiwan parallel extension systems were supported by industry and government to provide overall benefit.

Critical Elements of Models

While it is convenient to apply a model such as the land grant university to a particular country, it is obvious that the preconditions that contributed to its success in the US cannot be duplicated. It is also important to recognize the dynamic nature of this model which requires constant updating to suit changing needs specific to the US. Therefore, it is more appropriate to elicit the critical elements common to the two types of institutional arrangements described in this paper, and to use these elements as a guide in refocusing the functions of existing institutions in less developed countries. The following is a partial list of elements:

1. Recognizing the benefits of viewing research-teaching-extension as an organizational and interdependent continuum.

2. Involving suppliers and users of services in the system in designing institutional improvements.

3. Fostering collaborative and interdisciplinary research and instruction.
1. Viewing extension as one aspect of educational outreach.

2. Basing strategic planning on a holistic knowledge system rather than, for example, a national research agenda developed in isolation from the overall educational system agenda.

3. Designing durable core structures in institutions that can ensure integrity of functions during periods of reorganization and funding changes.

4. Maintaining an outward-looking focus on means of servicing client needs.

5. Operating within sustainable funding levels for core activities.

6. Ensuring involvement of staff across functional areas when funding is reduced. This is a benefit of multiple appointments.

7. Introducing system-wide total quality management approaches which include continuous human resource development.

8. Developing management skill and commitment which is cognizant of the need for developing a sustainable institution.

**Conclusion**

The integral nature of research, education and extension in agricultural knowledge systems requires linkages between separated institutions in those countries in which organizational arrangements do not automatically cause these activities to be co-managed. Determining appropriate mechanisms for such integration requires analysis of the functions and funding flows of existing organizations, and their expected future roles, as well as the custom-designing of mechanisms appropriate to each specific situation. On the other hand, where the opportunity exists to create single institutions which integrate the functions of research, education and extension for a region, the land grant model is a source of information for strategic planning. However, this opportunity would be more the exception than the rule.

The common need is for organizational mechanisms which effect coordination, collaboration and co-financing. Coordination is necessary among research, teaching and extension, and among organizations. Collaboration is necessary among researchers from different organizations for efficiencies in human and physical resource use, and among researchers from different disciplines. Co-financing is necessary to bring disparate resources together to achieve a critical funding mass for major activities. The resulting organizational structure should reflect the objectives of the organization and the means of accomplishing these objectives. Ideal structures will probably differ from country to country and require detailed management system analysis.

From the perspective of major international development agencies, such as the World Bank, we conclude that it is necessary to analyze each situation separately. Analysis of the agreed functions of the concerned organizations and existing structures to determine the flexibility available for change includes addressing such management issues as control and accountability. The approaches of the International Service for National Agricultural Research (1984) and the Food and Agriculture Organization of the United Nations (1993) also seem to be open to such considerations. In common with our conclusions, the implications that a management analysis prior to the planning of development assistance projects is necessary is significant. It appears that the days of a prescriptive model copied from another country are over.

**References**


Food and Agriculture Organization of the United Nations (1993). *The role of universities in national agricultural research systems.* Food and Agriculture Expert Consultation, Rome: FAO.


THE EMERGING ROLE FOR AGRICULTURAL EDUCATION IN PRODUCING FUTURE RESEARCHERS

Lindsay Falvey, Dean
Faculty of Agriculture, Forestry and Horticulture
The University of Melbourne
Parkville, Melbourne, Australia
61-3-93445029
61-3-93482156 (fax)
l.falvey@agriculture.unimelb.edu.au

Charles Maguire, Senior Institutional Systems Specialist
Agriculture and Forestry Division
The World Bank
1818 H Street NW, Washington DC
(202) 477-1234
(202) 334-0473 (fax)
cmaguire@worldbank.org

Abstract

Agricultural education is changing and will continue to do so in response to changes in the definition of the agricultural sector, communication technology and funding imperatives. Bachelor’s graduates will probably focus on career opportunities in natural resource management and vocationally oriented agricultural production, processing, and marketing fields. The small proportion of agricultural graduates with the aptitude and motivation to work effectively in research forms an important part of the post-graduate agricultural education pool and requires specific orientation to the changes occurring in agricultural research systems. Mechanisms used in some developed countries may be of benefit and provide a basis for strengthening overall human resource development and management in agricultural research systems, both in terms of the management of existing researchers, and the continuous training of new researchers. The approaches described in the paper have relevance to both more and less developed countries, particularly in agricultural knowledge systems that separate extension and applied research from education.

Two unrelenting pressures will sustain an ongoing need for an active and productive agricultural research base in the world’s major agricultural countries. These pressures, that of producing an ever increasing quantity of food for a growing population with rising individual consumption demands, and the need to protect the natural resource base and remaining areas of natural environment, provide a context for the consideration of agricultural education and research needs for the future. Issues and trends are relevant to both less developed countries (LDC) and more developed countries (MDC).

The Present Situation and Future Scenarios

Traditional agriculture in MDCs relied on secondary and tertiary educational institutions to produce specifically trained graduates for work in an apparently uncomplicated sector. The educational institutions responded and, over the decades, educated and trained scientists, technicians, and farmers to lead the sector to unprecedented success in feeding a growing world population. But traditional, uncomplicated agriculture has changed as has the classical image of the high-achieving agricultural science graduate becoming the
researcher, the subject matter specialist wearing a specific sub-sector label, the extension worker being a generalist, and the vocational student becoming the farmer. Science, management, and markets have transformed agriculture, and the graduates of today’s agricultural institutions compete for work with scientists skilled in genetics, bioengineering, and biochemistry; with MBA graduates, marketing specialists, and sociologists. The primary responsibility of tertiary agricultural education institutions is not the production of agricultural scientists for research but graduates who can find a niche in a sector where science and management combine to demand hybrid skills that were unknown a generation ago. For example, graduates could serve as advisers on environmental legislation to satisfy urban populations that farmers will care for the national land resource.

Several possible future scenarios for agricultural education can be posited. One of these, discussed in this paper, is the need to integrate research and education institutions, and the training of agricultural researchers in:

2. Maintenance of a source of researchers through post-graduate programs.
3. Improved human resource management in research systems.

Agricultural education has a wide span of objectives and prepares students for a range of opportunities and for that reason alone cannot be designed around the needs of agricultural research, and, in particular, the production of agricultural researchers. However, in a period of great change in agricultural education, we must all be sure that a reliable stream of broadly based, competent and motivated potential agricultural researchers flows from our agricultural education systems. Improved management of the resources of an Agricultural Research System (ARS) is a common interest for both LDCs and MDCs.

Maintaining Dynamic Agricultural Research Systems

Qualified and motivated researchers working in well-managed institutions are central to active and efficient ARSs. Effective agricultural knowledge systems in more developed countries link research providers to users of research outcomes. However, most agricultural knowledge systems can be described as institutionally separated (Falvey, 1995) in that applied research and extension are controlled by a ministry or department which is separate from the ministry or department overseeing agricultural education. By contrast, the land grant college model of the USA is an example of an institutionally integrated system, in which research, education, and extension (Meyer, 1995) are integrated in agricultural universities.

In most LDCs, universities operate independently from national research bodies and are seen, at best, as marginally relevant to ARSs and of little direct benefit to the private sector. At the same time, ARSs are often unable to readily find an adequate number of young, qualified researchers trained in research techniques in priority program areas. Universities are engaged primarily in teaching and research and tend to exclude extension activities. A dynamic ARS requires appropriate research and development (extension) planning and agreement on programs and objectives among all research institutions which comprise the ARS. Under these circumstances, universities can interact with ARSs more effectively. One example of an apparent failure to align the policies of research and educational institutions was a large-scale attempt to introduce into India an integrated system similar to that of the USA which was culturally inappropriate to the Indian context (World Bank, 1995). In that case, funding external to the university and foreign views tended to favor research at the expense of teaching and extension (Busch, 1988; Ryan, 1993).
While most students enrolled in agricultural degree programs will pursue careers other than research, the education and/or training of potential researchers remains a critical function of universities. Even though the proportion of students who demonstrate an interest in and an aptitude for research may be small, these students require support from an ARS to focus their research training on relevant fields and gain formative experiences with practical researchers. Research training in agriculture should extend beyond the traditional technical areas in the plant and animal sciences to such areas as consumer, extension and vocational education.

Research activities of graduate students should be aligned with the priorities established by an ARS. This is in contrast with the traditional selection of research topics by professors to complement their own research interests. In an applied area of science such as agriculture, it is appropriate that research conducted by university staff reflects applied and strategic research interests that overlap, even if not fully, with those of the state or national research institutions. The following survey results indicate that MDCs committed to either the institutionally integrated or institutionally separated models for agricultural knowledge systems are developing mechanisms to ensure the production of motivated and competent agricultural researchers.

Information on successful innovations in the education of future researchers in MDCs was elicited through a survey of 13 informed and influential persons engaged in management of research in government research organizations, universities, and research funding organizations in Australia, New Zealand and the USA. The overriding conclusions of the survey were that (a) current mechanisms of funding post-graduate study through scholarships are beneficial, (b) industry support for such research training is critical in all applied fields, (c) joint industry and government funding through levy or check-off schemes are valuable funding mechanisms when managed jointly with industry, (d) there needs to be a constant awareness of the traits which are common to successful researchers and guidance offered to undergraduates who possess such traits, and (e) research training is more effective and more attractive when it is conducted in industrial or research institutional facilities and is linked to continuing employment. The strong emphasis on applied research implied in these approaches was not seen as a concern for any of the three countries, provided basic research was also conducted, sometimes in faculties other than agriculture.

The findings of the survey and international development experience in general suggest that the management of agricultural research systems and the development and management of human resources for and in these systems is critical. Figure 1 introduces a means of understanding the integration of human resource needs for long-term effectiveness in an ARS. It indicates the links between management of research institutions with both general and agricultural universities for the conduct of research and the production of future researchers.

Managing Agricultural Research Systems

Perhaps the major global investor in changes to ARSs is the World Bank, which is now seeking to integrate research and education to a greater extent than it has done in the past (Falvey & Maguire, 1996). Further development of agricultural education to include information technology brings education and extension closer by increasing access and delivery alternatives (Zijp, 1995). Mechanisms employed in selected MDCs that support the linking of research, education, and extension and the focus of each on the needs of national and private developers include the following:
1. **Joint appointments of research staff between universities and state or national research institutions.** These positions may be funded externally, or by the two organizations concerned, and have responsibility to both organizations in a field of agreed mutual importance. Such positions may be appropriate in circumstances in which a key research field requires both ongoing research and the production of a stream of future researchers. One example is that of the joint funding of a new position which combines the senior horticultural research position for the State of Victoria in Australia and a new professorial fellow position at the University of Melbourne. The position aims to link all research programs and to strengthen linkages to education and extension. However, perhaps the best developed examples are those of the joint operations of the research, education and extension systems of the land grant colleges of the USA.

2. **Industry contributions through levies or other funding mechanisms, matched by government, which are reliable and long term for the commissioning of required research.** Such funds provide a mechanism independent of the agencies engaged in research and education and therefore remove a possible bias in the selection of research programs of both researchers and students. They also provide an effective means of maintaining industry commitment to efficient allocation of government funds as well as maintaining research relevancy. This mechanism provides much of the operational funding for agricultural research in Australia through the Rural Research and Development Corporations which are funded through check-offs of commodities matched by government funds..

3. **Scholarship programs for high-performing graduate research students which specify priority research fields.** Such scholarships share the benefits of independence of industry-funded research and also allow significant control over the area of research study for top students. Scholarships may include a guarantee of employment by the research institution in situations where the problem of poorly defined career paths exists. This mechanism is used in New Zealand to a significant extent in selecting outstanding students and orienting their research studies to national priority areas.

4. **Competitive funds for research, scholarships and joint appointments (where applicable) open for all universities with the capacity to serve agriculture.** As agriculture and agricultural research require sophisticated skills, it is no longer feasible to access all resources from single institutions or one type of institution. Agricultural faculties and universities will continue to provide the majority of education for integrating disciplines and applied fields and much of the strategic research. However, faculties in such fields as molecular biology, microbiology, biochemistry and botany also have expertise important to agriculture.

5. **Joint supervision of research students by university and line agency staff.** Research students and university staff will gain from exposure to staff in non-university research institutions and the real world of agricultural research. Research topics selected will also be better focused on applied field problems. New Zealand universities, among those of other countries, accredit staff of research agencies to act as supervisors of research students.

6. **Involvement of universities in ARS policy.** Universities form a critical component in all countries with an active ARS, and, as such, should be considered in all relevant policy matters. This allows estimation of the benefits of incorporating mechanisms to stimulate redirection of university activities, producing future competent and relevant researchers, and expanding the pool of active researchers in the ARS. This mechanism is best evidenced in the US land grant colleges which seek to link research policy with extension and education policy.

7. **Selective use by LDCs of MDC universities.** Past concerns of the cost and retention rates of LDC researchers educated in more developed
countries may be reduced by strategic
management of the key skills required from
foreign universities. This appears to be
occurring as LDC countries assume control of
funds to engage foreign institutions as distinct
from past aid oriented projects designed, at least
in part, by staff of the foreign universities.

8. **Ensure adequacy of core funding for the
maintenance of the university human resource.**
The OECD (1987) has noted that the future of a
university is largely dependent on the quality,
dedication, motivation, and productivity of
academic staff. Investments in ARS should
acknowledge such a critical role and consider
supplementary investment for key institutions.
While reductions in funding from government to
universities in most MDCs may appear to
contrast with this point, these reductions could
result in greater efficiencies because of an
enhanced management focus on strategic
strengths. This suggests that major agricultural
universities in each country could benefit from a
core funding approach supplemented by external
resources. LDC universities, on the other hand,
are often underfunded to such an extent that no
one discipline area can be reliably maintained.

9. **Building on strengths and needs.** The
combined impact of increased fiscal
accountability and new communication
technologies is expected to lead to major
changes in staffing profiles and attitudes to and
modes of teaching in agricultural universities in
MDCs. LDCs are likely to follow the trend.
One might expect to see fewer institutions
which have a critical mass of specialist and
generalist scientists active in fields directly
relevant to industry in their locale. The focused
approach of New Zealand which orients
research students to national priorities is one of
building on national strengths and strategies.

Many of these mechanisms are to be found in
the US land grant college system which
integrates research, teaching, and extension
through single institutions. However, that
system is unique to the USA, and the conditions
that fostered the establishment of those colleges
(World Bank, 1992) cannot be readily
duplicated in other countries. Separate
institutional arrangements commonly found in
those countries require such mechanisms to be
established.

The above mechanisms aimed at linking
education and research in agricultural research
systems which are not integrated can be
accommodated through initial project planning
in the case of LDCs which borrow funds to
develop their research systems, and through
ongoing human resource development and
management programs.

**Management of Human Resources in
Research**

Considerable effort may be invested in
designing advanced training programs for
research staff and, in some countries for
academic programs, without realizing the full
potential of trained staff. Each ARS requires
systematic human resource management to link
needed skilled researchers with compatible
assignments, to provide incentives for high
grade performance, to create opportunities for
intellectual growth, and to offer promotion
based on fair and transparent merit criteria.

ARSs need a human resource development and
management capacity, and any institutional
rearrangement of an ARS should include
analysis of existing capability and the need for
improvement. The essential human resource
development and management elements to be
considered are:

1. Skill mix identification based on future
research priorities.

2. Accurate job descriptions for use in hiring
new personnel.

3. Selection of staff based on areas of
competence.
4. Ability to conduct training needs assessments.

5. Ability to plan and manage in-service training programs.

6. Capacity to evaluate the impact of in-service training.

7. Willingness of managers to acknowledge superior performance.

8. Provision of opportunities for intellectual growth, such as sabbaticals.


To be effective, human resource development and management must be the responsibility of all management, and manager level workshops should be conducted to clarify concepts, define responsibilities, and develop skills. Managers’ job descriptions need to reflect these responsibilities. Linkages to research students will allow personnel in human resource development and management systems to manage both current and, to an extent, future researchers. Linkages also allow enculturation of prospective researchers to the system and thereby reduce the risk of trained researchers being unsuitable to a particular research organization.

In-service training in an ARS should be continuous and include both formal and non-formal activities. Such training and interaction with the larger research community can be further enhanced through use of media such as video and the Internet. As education and training become increasingly recognized as an individual’s life-long responsibility, the opportunity for tertiary educational institutions to offer customized courses or other training interventions will lead progressive institutions to further integrate with dynamic ARSs.

References


Consensus among researchers, extension workers and farmers regarding the attributes of a new pigeon pea cultivar was studied to better understand its low adoption by farmers in Trinidad and Tobago. Accuracy, congruency and agreement (indicators of consensus) were measured using Groot’s co-orientational framework (1970). Extension workers were more accurate and congruent than researchers in assessing what attributes farmers would consider to be important in a new cultivar. Extension workers link researchers and farmers, and should facilitate the continuing development and use of new pigeon pea cultivars.

Agreement, or similarity of views, regarding the cultivar’s attributes was not found among the three groups, due to differences between traditional views of farmers and the newer ideas of extension workers and researchers. Demonstrating the value of new technology through appropriate extension methods should help increase agreement.

Integrated, interactive involvement of researchers, extension workers and farmers should be a significant aspect of the development, transfer and use of pigeon pea technology.

Introduction

This paper focuses on accuracy, congruency and agreement (indicators of consensus) among farmers, researchers and extension workers using a co-orientational analytical technique. It is believed that consensus among these important actors in the general development, transfer and use of technology can motivate researchers to do relevant research, extension workers to promote research-based recommendations, and farmers to adopt new technology. These indicators of consensus were determined with respect to the attributes of a new pigeon pea cultivar introduced in Trinidad and Tobago. The study was conducted during the period December 1989 to June 1990.

Pigeon pea production continues to be an agricultural occupation sustained by small food producers in Trinidad and Tobago. Despite three decades of research on varietal improvement, pigeon pea farmers continue to use the more traditional cultivars. These traditional cultivars have not sustained this important crop beyond short cycles of annual production (Dolly, 1993). Researchers had produced a new cultivar more suited to mechanical cultivation and producing a crop within a shorter period of time. This cultivar was released and promoted among producers in 1985 (University of the West Indies, 1986). However, the new cultivar was not widely adopted in pigeon pea farming systems (Dolly, 1993). This predicament is similar to the situation in India, where pigeon pea is popular among small farmers. Studies there have indicated that the advantages of improved cultivars and improved agricultural practices have not been transferred to and/or been adopted by the farming community (Bahi, 1989; Johansen, McDonald, Singh & van Rheener, 1990). One possible reason hypothesized by the author for low adoption of the pigeon pea...
cultivar in Trinidad and Tobago could have been differing levels of consensus among researchers, extension workers and farmers engaged in their respective areas of pigeon pea technology generation, transfer and production. Therefore, this study was focused on assessing the views of researchers, extension workers and farmers regarding the attributes of the new pigeon pea cultivar. The study follows an analytic framework for farmers developed by Groot (1970).

Groot studied 142 Philippino rice farmers, 20 extension agents and 6 plant breeders to determine their views regarding the attributes of rice cultivars grown in the Philippines. He related his findings to the premise that the interaction between people is, in part, determined by “the perception and evaluation” people have of each other. The general model of Groot’s analytical design for assessing co-orientation as developed and tested in the Philippine study is shown in Figure 1.

Figure 1


Key:  
1 - Farmer’s own response.  
2 - Farmer’s estimate of extension worker’s response.  
3 - Farmer’s estimate of scientist’s response.  
4 - Extension worker’s estimate of farmer’s response.  
5 - Extension worker’s own response.  
6 - Extension worker’s estimate of scientist’s response.  
7 - Scientist’s estimate of farmer’s response.  
8 - Scientist’s estimate of extension worker’s response.  
9 - Scientist’s own response.
Co-orientation, as suggested by the model, is defined as a measure of the processes which contribute to a consensus of views of farmers, researchers and extension workers. Co-orientation analysis yields three measures of consensus - accuracy, congruency and agreement. Relating to the model in Figure 1, accuracy is defined as the estimates of researchers (7) and extension workers (4) of the views of farmers compared with the views of the farmers themselves (1); congruency is defined as the views of researchers (9) and extension workers (5) compared with their estimates of the views of farmers (7, 4 respectively); agreement is defined as the extent of similarity among the views of scientists (9), extension workers (5) and farmers (1).

The results of Groot's work indicated that the extension worker, who occupies an intermediary position between the farmer and the researcher, had high accuracy, congruency and agreement scores with both farmers and researchers, and therefore plays a much more important role of two-way communication than a one-way messenger who carries messages only from the researcher (laboratory) to the farmer (farm).

Groot's co-orientational analysis of the views of "actors" in the rice industry of the Philippines was another way of addressing factors involved in cultivar improvement. There is no account in the published literature of follow-up agricultural research using Groot's co-orientational analysis. Research studies have been reported on community consensus building (Broom, 1977; Meiller, 1975), listening behavior states (Buchili & Pearce, 1974) and shared behavior among rational partners (Gantz, Wenner, Carrico & Kroon, 1995) using other schema.

Broom (1977) compared consensus among the members of two rural Wisconsin communities in the United States which were similar in their economic, social and environmental problems and opportunities. The respondents were asked to measure the extent of members' "awareness" and "importance" of community issues. Following this, they were told each other's initial responses. They were then asked to once more measure the extent of members' awareness and importance. In both experiments, Broom measured accuracy, congruency and agreement. He concluded that people's accuracy, congruency and agreement improved by way of hearing what people in those rural communities thought about each other's viewpoint.

Meiller (1975) conducted a similar study in two rural communities, also in Wisconsin. He measured accuracy, congruency and agreement before and after a mass media blitz, and found an increase after the media exposure. He concluded that the media has an important role to play in this regard.

In a study by Buchili et al. (1974), "co-orientational states" were induced between 117 students and the judges of four legal cases. The students recorded their verdicts and listened to the judge's verdict. The different co-orientational states were measured before and after. The researchers related listening capacity to different co-orientational states, and concluded that the poorest listening is done by those who are told before hand that the judge is endorsing a position they believe in.

Gantz et al. (1995) measured agreement, congruency and accuracy among 92 pairs of partners in two major US cities with respect to the scope and nature of televised sport in their relationships. Telephone interviews were conducted with the second partner interviewed immediately after the first. The measures were computed by matching responses across partners. The study concluded that televised sports appeared to be a minor and non-disrupting activity in most of the relationships.

Purpose of the Study

The purpose of the study was to assess the extent of consensus among farmers, extension workers and scientists regarding attributes of a new pigeon pea cultivar. Consensus was to be determined by the levels of accuracy, congruency and agreement.

Methodology
Study Respondents

In Trinidad, a list of 410 farmers was obtained from two adjacent rural villages. These were La Lune and Marac. These villages are situated in the extension district of Moruga, South Trinidad, County Victoria. The list was a county record of all foodcrop farmers. All foodcrop farmers in La Lune and Marac cultivated the pigeon pea. Each farmer was assigned a number from 1 to 410. A table of random numbers guided the selection of a ten percent sample of farmers (n=41) and six replacements. Two replacements were used.

In Tobago, a list of 420 foodcrop farmers was obtained from the Tobago House of Assembly, Scarborough, Tobago. This is the local county agency responsible for recording farmers in the districts of Tobago. Farmers were assigned a number from 1 to 420. A table of random numbers guided the selection of a ten percent sample of farmers (n=42) and six replacements. Five replacements were used.

The extension workers in the study were 62 frontline officers who work with pigeon pea farmers in all nine county districts of Trinidad and Tobago. The researchers were 37 attendees at a 4-day group training workshop on pigeon pea research and production, held at the University of the West Indies (UWI), St. Augustine Campus, Trinidad in 1987 (Food and Agriculture Organization of the United Nations, 1987). They represented their agencies in the area of pigeon pea research and development and were exposed to the latest information on the direction of cultivar improvement particularly from the perspective of the UWI, Trinidad and Tobago.

Instrumentation

Ten cultivar attributes of the pigeon pea were selected for rating by the study respondents. These were “Dwarf height at flowering”, “Pod-borer resistance”, “Green-pod yield”, “Ease of shelling”, “Large seed size”, “Year-round cultivation”, “Mechanisation potential”, “Number of seeds per pod”, “Resistance to fungal and viral disease,” and “Cooking quality”.

These attributes were based on information contained in (a) extension bulletins by Griffith and Mohammed (1987) and Ferguson and Mohoyodeen (1988) on alternative suitable cultivar production systems for Trinidad and Tobago, and (b) an unpublished M.Sc. thesis of Mohoyodeen (1988) on the agronomic qualities of three early-maturing pigeon pea cultivars.

A 5-point Likert-type scale was used to measure judgements of attributes. Respondents were asked to rate the importance of these attributes by indicating if they were not at all important (1), barely important (2), of average importance (3), of more than average importance (4), and most important (5).

Extension workers, researchers and farmers were asked to rate the attributes. Extension workers and researchers were also asked to predict (estimate) farmers' ratings. Means of these ratings were used to compute ascending rank orders for attributes (1-10) chosen by farmers (fr), researchers (rr) and extension workers (er); and ascending rank orders for attributes (1-10) predicted by extension workers (efp) and researchers (rfp) about farmers' ratings.

Spearman's rank order correlation coefficients were computed for:

1. Accuracy of researchers and extension workers predictions of farmers’ ratings (rfp, efp) compared with farmers’ ratings (fr).

2. Congruency of (a) researchers' ratings (rr) and researchers' predictions of farmers’ ratings
(rfp), and (b) extension workers’ ratings (er) and predictions of farmers' ratings (efp).

Agreement was determined by comparing the mean ratings of researchers (rr) and farmers (fr), and extension workers (er) and farmers (fr) using the t-test. The alpha level for a significant difference in agreement scores was established a priori at .05.

Data Collection and Analysis

The 37 researchers were mailed a self-addressed questionnaire in December 1989. Thirteen researchers who did not respond were sent another request. Twenty-seven researchers (72.9%) eventually responded.

The 62 extension officers, 42 farmers in Tobago and 41 farmers in Trinidad were interviewed by two B.Sc. agricultural graduates of the University of the West Indies. They were trained by the researcher prior to their assignments. One interviewer from Tobago obtained the information in Tobago, the other interviewer was from Trinidad and interviewed the Trinidad respondents. Interviews were conducted during the period, 1st January to 31st March, 1990. Subsequently, responses were coded and prepared for analysis. Statistical analyses were done using an SPSSPC application package, Version 4 (SPSS Inc., 1990).

Results

Accuracy

The accuracy of extension workers' and researchers' predictions of the ratings of farmers of the cultivar attributes compared with the ratings of farmers using Spearman's rank correlation technique is presented in Tables 1 and 2, respectively.

Table 1

Accuracy of Extension Workers' Predictions of Farmers' Ratings and Farmers' Ratings.

<table>
<thead>
<tr>
<th>Cultivar Attributes</th>
<th>Extension workers' prediction of farmers' rating</th>
<th>Rank(^a)</th>
<th>Farmers' rating</th>
<th>Rank(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year-Round Production</td>
<td>4.94</td>
<td>1</td>
<td>4.94</td>
<td>3</td>
</tr>
<tr>
<td>Large Seed Size</td>
<td>4.53</td>
<td>2</td>
<td>4.96</td>
<td>1</td>
</tr>
<tr>
<td>Pod Borer Resistance</td>
<td>4.42</td>
<td>3</td>
<td>4.72</td>
<td>6</td>
</tr>
<tr>
<td>Number of Seeds per Pod</td>
<td>4.32</td>
<td>4</td>
<td>4.95</td>
<td>2</td>
</tr>
<tr>
<td>Green Pod Yield</td>
<td>4.28</td>
<td>5</td>
<td>4.78</td>
<td>5</td>
</tr>
<tr>
<td>Ease of Shelling</td>
<td>4.21</td>
<td>6</td>
<td>4.59</td>
<td>8</td>
</tr>
<tr>
<td>Cooking Quality</td>
<td>4.18</td>
<td>7</td>
<td>4.88</td>
<td>4</td>
</tr>
<tr>
<td>Resistance to Fungus and Virus</td>
<td>4.01</td>
<td>8</td>
<td>4.60</td>
<td>7</td>
</tr>
<tr>
<td>Mechanisation Potential</td>
<td>3.85</td>
<td>9</td>
<td>4.01</td>
<td>10</td>
</tr>
<tr>
<td>Dwarf Height at Flowering</td>
<td>3.76</td>
<td>10</td>
<td>4.06</td>
<td>9</td>
</tr>
</tbody>
</table>

\(^a\) Ranked by ascending order of importance of mean rating scores (1-10).

Spearman's Rank Correlation Coefficient, corrected for ties: .794, \(p=0.006\)
Results of the analysis presented in Table 1 show that extension workers predicted farmers’ ratings with a high level of accuracy. Spearman's rank correlation coefficient for the ten attributes was .794, significant at the .01 level. On the other hand, with regard to the analysis of researchers' predictions of farmers' ratings compared with the ratings that farmers gave to the attributes, the Spearman rank correlation coefficient was not significant, indicating a low level of accuracy of researchers’ predictions (Table 2).

**Congruency**

The congruency of extension workers’ and researchers' ratings of the attributes with their predictions of the ratings of farmers using Spearman's rank correlation technique is presented in Tables 3 and 4, respectively.

The results of the analyses indicate high levels of congruency between extension workers’

<table>
<thead>
<tr>
<th>Cultivar Attributes</th>
<th>Researchers' prediction of farmers' rating</th>
<th>Ranka</th>
<th>Farmers' Rating</th>
<th>Ranka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pod Borer Resistance</td>
<td>4.59</td>
<td>1</td>
<td>4.72</td>
<td>6</td>
</tr>
<tr>
<td>Ease of Shelling</td>
<td>4.26</td>
<td>2.5</td>
<td>4.59</td>
<td>8</td>
</tr>
<tr>
<td>Year-Round Production</td>
<td>4.26</td>
<td>2.5</td>
<td>4.94</td>
<td>3</td>
</tr>
<tr>
<td>Cooking Quality</td>
<td>4.22</td>
<td>4.5</td>
<td>4.88</td>
<td>4</td>
</tr>
<tr>
<td>Mechanisation Potential</td>
<td>4.22</td>
<td>4.5</td>
<td>4.01</td>
<td>10</td>
</tr>
<tr>
<td>Large Seed Size</td>
<td>4.15</td>
<td>6.5</td>
<td>4.96</td>
<td>1</td>
</tr>
<tr>
<td>Green Pod Yield</td>
<td>4.15</td>
<td>6.5</td>
<td>4.78</td>
<td>5</td>
</tr>
<tr>
<td>Dwarf Height at Flowering</td>
<td>4.11</td>
<td>8</td>
<td>4.06</td>
<td>9</td>
</tr>
<tr>
<td>Number of Seeds per Pod</td>
<td>3.81</td>
<td>9</td>
<td>4.95</td>
<td>2</td>
</tr>
<tr>
<td>Resistance to Fungus and Virus</td>
<td>3.44</td>
<td>10</td>
<td>4.60</td>
<td>7</td>
</tr>
</tbody>
</table>

a Ranked by ascending order of importance of mean rating scores (1-10)
Spearman's Rank Correlation Coefficient, corrected for ties: -0.086, p=0.814

**Agreement**

Agreement between researchers' ratings and farmers' ratings of the attributes, and extension workers' ratings and farmers' ratings of the attributes was assessed by seeing if there were statistically significant differences in mean ratings between the respective groups using the t-test procedure. The results of the analysis presented in Table 5 show statistically significant differences between researcher and farmer ratings on 6 of 10 attributes, and between extension worker and farmer ratings on 7 attributes. These findings suggest a low level of agreement with respect to the cultivar attributes.
### Table 3

**Congruency of Extension Workers' Ratings and Extension Workers' Prediction of Farmers' Ratings.**

<table>
<thead>
<tr>
<th>Cultivar Attributes</th>
<th>Extension workers' rating</th>
<th>Rank(^a)</th>
<th>Extension workers' prediction of farmers' rating</th>
<th>Rank(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year-Round Production</td>
<td>4.40</td>
<td>1</td>
<td>4.53</td>
<td>1.5</td>
</tr>
<tr>
<td>Large Seed Size</td>
<td>4.31</td>
<td>2.5</td>
<td>4.53</td>
<td>1.5</td>
</tr>
<tr>
<td>Green Pod Yield</td>
<td>4.31</td>
<td>2.5</td>
<td>4.28</td>
<td>5</td>
</tr>
<tr>
<td>Number of Seeds per Pod</td>
<td>4.28</td>
<td>4</td>
<td>4.32</td>
<td>4</td>
</tr>
<tr>
<td>Pod Borer Resistance</td>
<td>4.04</td>
<td>5</td>
<td>4.42</td>
<td>3</td>
</tr>
<tr>
<td>Ease of Shelling</td>
<td>3.68</td>
<td>6</td>
<td>4.21</td>
<td>6</td>
</tr>
<tr>
<td>Cooking Quality</td>
<td>3.67</td>
<td>7</td>
<td>4.18</td>
<td>7</td>
</tr>
<tr>
<td>Resistance to fungus and Virus</td>
<td>3.56</td>
<td>8</td>
<td>4.01</td>
<td>8</td>
</tr>
<tr>
<td>Mechanisation Potential</td>
<td>3.26</td>
<td>9</td>
<td>3.85</td>
<td>9</td>
</tr>
<tr>
<td>Dwarf Height at Flowering</td>
<td>3.24</td>
<td>10</td>
<td>3.76</td>
<td>10</td>
</tr>
</tbody>
</table>

\(^a\) Ranked by ascending order of importance of mean rating scores (1-10)

Spearman's Rank Correlation Coefficient, corrected for ties: 0.930, \(p=0.0001\).

### Table 4

**Congruency of Researchers' Ratings and Researchers' Prediction of Farmers' Ratings.**

<table>
<thead>
<tr>
<th>Cultivar Attributes</th>
<th>Researchers' rating</th>
<th>Rank(^a)</th>
<th>Researchers' prediction of farmers' rating</th>
<th>Rank(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year-Round Production</td>
<td>4.40</td>
<td>1</td>
<td>4.26</td>
<td>3</td>
</tr>
<tr>
<td>Pod Borer Resistance</td>
<td>4.38</td>
<td>2</td>
<td>4.59</td>
<td>2</td>
</tr>
<tr>
<td>Green Pod Yield</td>
<td>4.32</td>
<td>3</td>
<td>4.15</td>
<td>6.5</td>
</tr>
<tr>
<td>Large Seed Size</td>
<td>4.15</td>
<td>4</td>
<td>4.15</td>
<td>6.5</td>
</tr>
<tr>
<td>Ease of Shelling</td>
<td>4.00</td>
<td>5</td>
<td>4.60</td>
<td>1</td>
</tr>
<tr>
<td>Number of Seeds per Pod</td>
<td>3.92</td>
<td>6</td>
<td>3.81</td>
<td>9</td>
</tr>
<tr>
<td>Cooking Quality</td>
<td>3.48</td>
<td>7</td>
<td>4.22</td>
<td>4.5</td>
</tr>
<tr>
<td>Dwarf Height at Flowering</td>
<td>3.33</td>
<td>8</td>
<td>4.11</td>
<td>8</td>
</tr>
<tr>
<td>Mechanisation Potential</td>
<td>3.17</td>
<td>9</td>
<td>4.22</td>
<td>4.5</td>
</tr>
<tr>
<td>Resistance to Fungus and Virus</td>
<td>3.12</td>
<td>10</td>
<td>3.44</td>
<td>10</td>
</tr>
</tbody>
</table>

\(^a\) Ranked by ascending order of importance of mean rating scores (1-10)

Spearman's Rank Correlation Coefficient, corrected for ties: 0.549, \(p=0.1049\).
Table 5

Agreement of Researchers’ and Farmers' Ratings, and Extension Workers' and Farmers' Ratings.

<table>
<thead>
<tr>
<th>Cultivar Attributes</th>
<th>Researchers-farmers</th>
<th>Extension workers-farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwarf Height at Flowering</td>
<td>.38</td>
<td>1.42</td>
</tr>
<tr>
<td>Pod Borer Resistance</td>
<td>.79</td>
<td>2.29*</td>
</tr>
<tr>
<td>Green Pod Yield</td>
<td>3.93*</td>
<td>3.49*</td>
</tr>
<tr>
<td>Ease of Shelling</td>
<td>1.39</td>
<td>2.42</td>
</tr>
<tr>
<td>Large Seed Size</td>
<td>8.26*</td>
<td>5.44*</td>
</tr>
<tr>
<td>Year Round Production</td>
<td>5.99*</td>
<td>4.00*</td>
</tr>
<tr>
<td>Mechanisation Potential</td>
<td>.77</td>
<td>.76</td>
</tr>
<tr>
<td>Number of Seeds Per Pod</td>
<td>9.10*</td>
<td>6.32*</td>
</tr>
<tr>
<td>Resistance to Virus and Fungi</td>
<td>5.34*</td>
<td>3.63*</td>
</tr>
<tr>
<td>Cooking Quality</td>
<td>5.94*</td>
<td>5.41*</td>
</tr>
</tbody>
</table>

a df=109  
b df=144  
* p ≤ .05

Conclusions

The results of the study indicate that extension workers are more accurate than researchers about what farmers perceive to be important in a new pigeon pea cultivar. Extension workers were also more in congruence with the farmers than researchers were with farmers. These findings suggest that extension workers can contribute to the technology transfer process by advising on the content and direction of changes in technology for farmers.

As in Groot’s earlier study among rice farmers in the Philippines, the extension worker is seen as a valuable intermediary between researchers and farmers in view of higher accuracy and congruency between extension worker and farmers. It is recommended that extension workers be facilitators in the continued development and use of new pigeon pea cultivars for farmers.

Lack of agreement found in the study reflects typical differences between long-standing, traditional feelings of farmers and the newer ideas of extension workers and researchers. This is an important concern since the leadership of extension workers and researchers is needed to help facilitate a change in the technology which farmers use. In order to improve agreement, farmers must be convinced of the rationale for the newer, non-traditional views. Appropriate extension methods like method demonstrations, result demonstrations and field tours can be used to demonstrate the validity of technology, such as, in this case, the attributes of a new and different cultivar.

The comparison of views among three important actors in the technology development process is a useful analysis to decide the type of contributions expected from farmers, extension workers and researchers. This encourages a motivated researcher, a facilitating extension worker and a farmer who is willing to adopt a new technology.

It is recommended that the integrated, interactive involvement of researchers, farmers and extension workers be continued in efforts to improve cultivar features of the pigeon pea for
subsequent use within the foodcrop industry of Trinidad and Tobago. This would enhance appropriateness of new cultivar types for the farmers' environment and increase the chances of adoption.

Further studies can be done on this approach to understanding consensus and the process of technology transfer. In such studies, the variable adoption rate can be measured in relation to different congruency, accuracy and agreement scores. It would then become possible to determine the precise requirements of consensus in order to achieve high, medium or low adoption rates. Extension methods or research-extension linkages which provide high levels of congruency, accuracy and agreement, can also be studied.

Acknowledgments

The author acknowledges the interest and support of the following research colleagues: Dr. Larry Meiller (University of Wisconsin, Madison, U.S.A.), Dr. Richard Powers (posthumous, University of Wisconsin, Madison, U.S.A.), Edwin Joseph (University of Wisconsin, Madison and Ministry of Agriculture, Land and Marine Resources, Trinidad and Tobago), Mr. Bruce Lauckner (Caribbean Agricultural Research and Development Institute, Trinidad and Tobago), Dr. Richard Braithwaite (Department of Food Production [formerly Crop Science], University of the West Indies, Trinidad and Tobago).

A special thanks to the cooperative pigeon pea growers who engaged my attention and the extension staff at the Craignish Demonstration Station, Princes Town, Trinidad.

References


EDUCATIONAL IMPACTS OF THE TRAINING AND VISIT EXTENSION SYSTEM ON SMALL FARMERS IN THE WEST PROVINCE OF CAMEROON

Isaac R. Tchouamo, Assistant Professor
The University of Dschang
Faculty of Agronomy
P.O. Box 245
Dschang, Cameroon
(237) 45-13-51 or 45-20-63
(237) 45-12-02 or 45-14-36 (fax)

Roger E. Steele, Assistant Professor
Cornell University
Department of Education
Ithaca, NY 14853
(607) 255-2198
(607)-255-7905 (fax)
res21@cornell.edu

Abstract

A mid-1980s evaluation of the national extension system in Cameroon revealed an inefficient and ineffective system not fulfilling its mission to alleviate poverty in farming areas. Stakeholders felt a strong need to revitalize and change the approach. In 1988, the Training and Visit Extension System (T&V) was adopted as a new approach. Impacts of the new approach on the target population in the West Province, one of the ten provinces of Cameroon, are described in this paper. Sixty farmers from Mbouda Extension Zone, where T&V was piloted in 1988, completed a three-part questionnaire identifying demographic characteristics, frequency of contact with the village extension worker (VEW), and changes in knowledge and adoption. After five years of T&V implementation, only 30% of the respondents in the sample reported contact with their VEW. The other 70% were not directly served by the T&V system. The authors recommend that T&V must be replaced with a more participatory approach that will facilitate joint problem solving and lead to more farmer-to-farmer sharing of expertise and resources.

Introduction

In the early eighties, the Food and Agriculture Organization (FAO), the US Agency for International Development (USAID), and the World Bank supported an assessment of the national extension system in Cameroon. The diagnosis revealed a number of weaknesses in a system that was not fulfilling its mission to alleviate poverty in farming areas. It was recommended that the country adopt the Training and Visit Extension System (T&V) as a solution to the plight of the current approach (Lucani et al., 1987). In 1988, the National Agricultural Extension and Education Program (NAEEP), based on the philosophy of T&V developed by Benor and his associates was launched, with financial assistance from the World Bank (Benor & Baxter, 1984; Benor & Harrison, 1977).

Those change agents who had been involved with the T&V project, at both national and local levels in Cameroon, had voiced considerable praise of the T&V approach. However, there was a more general perception that it had been unsuccessful in reaching poor small farmers. The authors of this study sought to examine local impacts of the new extension approach,
interacting directly with the target population, to inform the debate.

**Purpose of the Study**

The researchers looked for educational impacts of T&V on small farmers in the West Province of Cameroon. They examined the impact on knowledge and practice change of a sample of selected clients in Mbouda extension zone.

**The Training and Visit Extension System in Cameroon**

The Republic of Cameroon covers an area of 475,000 square kilometers, characterized by climate ranging from sahelian in the north to equatorial in the south. Its population of 13.1 million inhabitants, growing at an annual rate of 2.3%, consists of 224 ethnic groups and cultures. About 40% of the rural population, concentrated in the extreme north and western highlands, lives in absolute poverty with an annual per capita income of US $820 (Population Reference Bureau, 1994). A high percentage of people (67%) live in the rural west and find their livelihood from agriculture and livestock. With the densest population area of the country, the West Province of Cameroon is the smallest of ten provinces, covering an area of 13,883 square kilometers with 1,339,791 inhabitants.

The extension service was established by the Germans, French, and British. Since the early 1980s, institutional changes have taken place in an effort to set up an efficient system of extension to promote the expansion of cash crops and livestock, and to improve the living standards of rural dwellers.

Even though extension services are provided by various institutions, the Ministry of Agriculture (MINAGRI), with its 2,800 field staff is the most important. Since its creation, there has never been a uniform monitoring and evaluation of the extension services. Managerial difficulties within MINAGRI and bureaucratic bottlenecks prevent close links between extension agents and researchers (Lucani et al., 1987; Tchouamo, 1987). The educational level of field staff is low--only a First Leaving School Certificate supplemented by two weeks training at a rural training center (Tchouamo, 1986). The average extension worker in the West Province must assist 653 farmers, much higher than the recommended ratio of 1:323 (Lucani et al., 1987). The budgeting system is heavily centralized, with field staff having little autonomy.

The T&V system was perceived as a solution to extension problems in Cameroon. Launched in July 1988, the main objective of the T&V project was to “support government efforts to alleviate the major constraints hampering the effectiveness of the extension services and to achieve sustained increases in both agricultural production and farm incomes” (Fondouop, 1993, p.34). The project included both national and provincial level activities concentrated around three main sectors: extension services, training, and information.

Benor believed that a key component of extension is that the village extension worker (VEW) must be in regular contact with clients. It was expected that the contact farmers would then become extension agents to other farmers (Benor & Baxter, 1984). When T&V was started in the Bamboutos Division of the West Province, a list of 2,880 farmers was compiled from the 1977 general population census report and documents provided by a local coffee farmer cooperative. A group of 110 individuals was selected from this list to participate as T&V contact farmers. The remaining 2,770 farmers were intended to be served indirectly through interaction with the contact farmers.

**Conceptual Framework**

Horton (1990) believes it is impossible to establish a causal relationship between extension services and yields because of multiple causation between extension and other possible effects. Therefore, he proposed that the focus of extension program monitoring and evaluation should be shifted away from agricultural end results and toward the provision
of project services and farmers’ responses to them.

Cernea and Tepping (1977) indicated that the strategy in establishing impact indicators for the T&V system is not restricted to yield. They presented a list of evaluation indicators, including institution-building, and extension performance indicators, such as exposure to extension, visits, and adoption of farming practices. The analysis of program impact is an integral part of the T&V system (Benor & Baxter, 1984). Mohamed and Gamon (1995) based their analysis on Bennett’s chain of events in extension programs (Bennett, 1977; Mohamed & Gamon, 1995). They indicated that the evaluation of T&V should pay attention to its impact on inputs, extension activities, people involvement, clients’ reactions, change in knowledge, skill, attitude and aspiration, practice change, and end results.

Most evaluation studies of T&V have focused on the macro-level (Bagchee, 1995; Gentil, 1987; Levi & Kam, 1987; Mohamed & Gamon, 1995; Russel, 1987). Alternatively, this study sought indications of knowledge and practice change among poor small farmers in the West Province of Cameroon to better understand what is happening at the micro-level. The findings will help T&V management, policy-makers, donors, and the general public to improve the extension system in Cameroon for the benefit of small farmers.

**Methodology**

Primary data were collected from a sample of small farmers in Bamboutos Division, one of eight administrative units of the West Province. The main food producing area, Bamboutos Division has hosted the T&V program for the longest time, having been pilot tested there in 1988 before expansion to other divisions of the province. Out of the 215,523 inhabitants, over 80% live in rural areas. Only farmers from Mbouda subdivision, one of four units of the Bamboutos Division, were included in the study. A systematic sampling of 60 farmers (the highest number possible because of limited resources) was done by designating every 48th name from a list of 2,890 farmers provided by the VEW for interview.

The instrument consisted of a three-part questionnaire. The first section identified age, gender, marital status, level of formal education, and the language of communication with the VEW. The second section dealt with frequency of contact between the VEW and farmers and the themes discussed (Cernea & Tepping, 1977). The third section assessed the level of improvement of the respondent’s knowledge, application, and utilization of the VEW’s recommendations. The draft questionnaire had been distributed to colleagues in the Department of Rural Sociology and Agricultural Extension for comments and feedback. A pre-test was conducted with farmers near the University of Dschang.

Field data were collected by a trained fifth year student from February to May 1993. The questionnaire was hand-delivered to the selected farmers. An appointment was set for completion and further discussion. Each respondent had to be contacted 2-4 times, over a four-month period, before the interviewer was able to collect data from 55 farmers. Five additional farmers replaced the five in the original sample who could not be contacted during the data analysis period.

**Findings**

The average age of the respondents was 43 years, less than the national average of farm operators in Cameroon (55 years). The Bamileke society, predominant ethnic group in the area, has male heads of household. Only 3% of the sample were female, even though the 1984 agricultural census indicates that 24.2% of farmers in the West Province were women (République du Cameroun, 1987). Extension, including T&V, pays little attention to women farmers, who are the main food producers. As in the colonial era, T&V encourages export crops, grown predominantly by men.
A little over a quarter of the respondents (26%) had never attended any school, while 50% had completed the elementary level of education. The VEW deals primarily with illiterate farmers. The local dialect and pidgin English are the main channels of communication, while extension messages are developed in the French language.

After five years of T&V implementation, only 18 of the 60 potential clients (30% of the respondents) in the sample reported contact with their VEW. The other 42 respondents reported that they had no knowledge of the VEW, and were not served by the T&V system. Those 18 farmers who knew or had contact with the VEW form a sub-group that will be the focus of analysis and discussion in the remainder of this paper.

Data in Table 1 indicate the frequency of contact for the sub-group of 18 farmers who had knowledge of the VEW. The reader is reminded that the other 42 respondents reported no contact with the VEW and are not included in subsequent displays of data.

Less than one-fifth (17%) of this sub-group of respondents knew the VEW more than two years. Two-thirds of the meetings that the VEW had with the farmer lasted less than 60 minutes.

Sub-group respondents indicated that visits were frequent during the cropping season, with the VEW spending most time on demonstration of new agricultural practices. As crops grew, the visits became less frequent, and even so short that the VEW could not answer all the contact farmer’s questions. Respondents said that a visit by the VEW conferred status upon contact farmers. Because of this, the VEW was encouraged to visit often. Clients reported that they often provided gifts to the VEW. During the off-season, respondents reported that the VEWs spent considerable time socializing, often ignoring the primary objective of the visit.

The main themes of discussion during VEW visits were farm management (problems related to mixed cropping patterns), crop rotation, application of fertilizers and pesticides, government price policy of agricultural inputs and outputs, supply of high-yielding seed varieties, group dynamics, crop processing and storage, applications for subsidized loans, and demonstration of new methods of cultivation (staking, marking, and flat plowing). Even though the T&V system emphasizes the role of education rather than regulation, the respondents indicated that the VEW spent considerable time on loan applications, input supply, and sales of outputs.

Table 2 presents data on the frequency and percentages of farmers in the sub-group who found it difficult to apply the VEW’s recommendations. A majority of the farmers indicated that it was difficult to: store maize (94%); fill loan applications (88%); apply pesticides/insecticides on crops (83%); cultivate without ridges (83%); manage a poultry farm; and work in groups (61%). This may have resulted from VEW recommendations that required a high level of knowledge application, combined with use of more complicated equipment. For example, storing maize in cribs requires space and materials that are usually not available to small farmers. Applying pesticides/insecticides requires that the applicator not only know which product is appropriate, but also learn the use of a pump and other equipment. Filling loan applications presupposes a rather high level of reading ability, in contrast to the low literacy levels represented by the study’s population. On the other hand, 94% of sub-group respondents reported that they could easily rotate crops, and 83% thought that they could effectively apply fertilizers, signaling that T&V was most successful in getting adoption of these two crop production recommendations.
Table 1

Frequency of Contact Between Farmers\(^a\) and the VEW

<table>
<thead>
<tr>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time the respondents knew the VEW</td>
<td></td>
</tr>
<tr>
<td>Less than 6 months</td>
<td>7</td>
</tr>
<tr>
<td>6 months - 2 years</td>
<td>8</td>
</tr>
<tr>
<td>More than 2 years</td>
<td>3</td>
</tr>
<tr>
<td>2. Time spent with the VEW per visit</td>
<td></td>
</tr>
<tr>
<td>Less than 60 minutes</td>
<td>12</td>
</tr>
<tr>
<td>60-90 minutes</td>
<td>4</td>
</tr>
<tr>
<td>More than 90 minutes</td>
<td>2</td>
</tr>
</tbody>
</table>

\(^a\) n=18

Table 2

Application of VEW recommendations by Farmers\(^a\)

<table>
<thead>
<tr>
<th>VEW recommendations</th>
<th>Frequency</th>
<th>Difficult to apply recommendation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>1. Conservation and storage of maize in cribs</td>
<td>17</td>
<td>1</td>
<td>94</td>
</tr>
<tr>
<td>2. Filling loan applications</td>
<td>16</td>
<td>2</td>
<td>88</td>
</tr>
<tr>
<td>3. Application of pesticides/insecticides on crops</td>
<td>15</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>4. Utilization of flat plow</td>
<td>15</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>5. Management of a poultry farm</td>
<td>15</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>6. Working in groups</td>
<td>11</td>
<td>7</td>
<td>61</td>
</tr>
<tr>
<td>7. Application of fertilizers on crops</td>
<td>3</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>8. Rotation of crops</td>
<td>1</td>
<td>17</td>
<td>6</td>
</tr>
</tbody>
</table>

\(^a\) n=18

Conclusions

Scholars are finding that, despite some gains, T&V is not yielding the same high impact in Africa that was reported on other continents (Bagchee, 1995; Fondouop, 1993; Gentil, 1987; Russel, 1987). In Asia, T&V was implemented on top of an efficient support system of agricultural credit and agricultural research. In Cameroon, the VEW continues to perform a necessary supply and regulatory function, in contrast to the T&V philosophy, and is still lacking an adequate support system for T&V implementation.

The finding that 70% of the respondents in this study did not know or have any interaction with their VEW is a sign that the simple goal of establishing regular contact with farmers in a T&V pilot project has been a problem. Furthermore, of the 30% of respondents in the study region who did have contact with their VEW, only 17% had known the VEW for more than two years. Penetration by T&V was very limited, falling short of expectations.

There are numerous financial and cultural factors that prevented farmers from adopting recommendations for VEWs. Small farmers indicated considerable reluctance, and often unwillingness, to share information and
resources with others, believing the risk of losing something was too great. The researchers found that there is a climate of individualism and lack of trust. In this environment, T&V has recommended organizing clients into working groups as a means of facilitating extension communication to overcome some of the problems of individualization. However, the top-down T&V management approach has provided VEWs with little preparation or modeling for facilitating group dynamics in difficult environments, such as the West Province.

**Recommendations**

Adding a regulatory function to the role of an extension worker hinders client willingness to adopt and apply recommendations. T&V was intended to divorce the VEW from regulation, but respondents in this study indicated that the agent still performs these roles. For the extension program to be effective, the regulatory function must be provided in another manner, ideally as part of civil service reform.

The extension system in Cameroon must shift toward more of a participatory approach where small farmers, extension workers, and researchers collaborate for their common good. A climate should be engendered where relationships of collaboration, including recognition of the efforts of nongovernmental organizations involved in extension activities, predominate over the threats of unhealthy competition between individuals and groups (Mattocks & Steele, 1994). Success in attaining participation will help to address some of the institutional and cultural factors that hinder group methods of extension. Increasing participation in extension will also help facilitate shared problem identification, collaborative planning processes, and sharing of resources necessary for implementation of extension plans and recommendations. The T&V philosophy, which is primarily a management approach, can not help with interpersonal communication and group facilitation technologies that are needed to enhance participatory skills of VEWs. Other models of extension must be consulted and adapted to the local needs of farmers in Cameroon.

**References**


A COMPARATIVE STUDY OF FARMERS' PARTICIPATION IN TWO AGRICULTURAL EXTENSION APPROACHES IN TANZANIA

Mohammad Douglah, Professor
University of Wisconsin
Department of Continuing and Vocational Education
225 N. Mills Street, Room 110
Madison, WI 53706
(608) 263-7295
(608) 262-7751 (fax)
mdouglah@facstaff.wisc.edu

Nicodemus Sicilima
Ministry of Agriculture
P.O. Box 9192
Dar es Salaam, Tanzania

Abstract

Two approaches of agricultural extension work in Tanzania, the Training and Visit System (T&V) and Sasakawa Global 2000 (SG 2000), were compared on the extent to which they incorporated participatory practices in planning, implementing, and evaluating programs, used methodologies to enhance farmers' participation, and assisted in delivering program benefits. Data were collected through personal interviews from a random sample of 300 farmers residing in 30 villages, and from 26 local level village extension officers. Four focus group interviews were also conducted in four villages with six to eight farmers in each village. It was found that neither approach employed genuine participatory approaches in programming activities. There was more emphasis on involving farmers in implementing programs than on providing for their participation in planning and/or evaluating the processes or outcomes of their programs. Even though farmers participating in SG 2000 achieved significantly greater benefits compared to those participating in T&V, neither approach seemed to allow for mechanisms to promote self-generating resources to ensure continuity, confidence, and hope.

Introduction

Agriculture is the backbone of the economy of Tanzania. It is the major employer of the people, contributes about 55% to the gross domestic product, and brings in about 80% of the country's total foreign exchange earnings. Furthermore, food crops production in the country supports a population of more than 29 million Tanzanians which is growing at a rate of more than 2.8% per year.

To bring about rapid agricultural growth, the country has, since independence in 1961, embarked on various projects and programs in rural development, including agricultural extension. However, despite the government's investment and donors' support in agricultural development programs, the agricultural sector has not shown significant improvement (Lele, 1991).

To some extent, lack of agricultural development in the country has been attributed to deficiencies in the agricultural extension system. By and large, extension projects and programs in Tanzania have been criticized for being top-down or lacking genuine farmers' participation (Mannion & Brebony, 1990; Mpeshu, 1976; Oliech, 1975). Government leaders in the country, on the other hand, have emphasized that people should be given the...
“…freedom to participate in the making of all decisions which affect their lives” (Nyerere, 1968, p.51). Furthermore, the guiding principle of the ruling party in Tanzania states:

The obligation of our party is to ensure that the leaders and experts implement the plans that have been agreed upon by the people themselves…it is not correct for leaders and experts to usurp the people's right to decide on an issue just because they have the expertise (TANU, 1971, paragraph 28).

Despite these exhortations and proclamations, participation of people in Tanzania's development has not taken root. Government officials and rural development experts support the idea of participation in principle, but in practice there is no common agreement on what participation entails. For example, one view of participation is people's contribution of their labor to the implementation of a project designed by planners (Rahman, 1991). This type of participation, with all its good intentions, may lead to serious flaws in project execution because it fails to address the complex nature of the farmer and his or her farm (Nagel, 1992).

In its true meaning, genuine participation of people is non-directive and does not impose ideas on them; it is based on a dialogical process; it is educational and empowering; starts from what people know and from where they are; is based on resources mobilized by them; relies on their collective effort; promotes self-reliance but acknowledges the partnership among individuals and their change agent as co-learners (Burkey, 1993; Oakley & Marsden, 1985). Therefore, contrary to the general practice in rural development, people's participation is not limited to farmers attending meetings or contributing their labor to the implementation of projects designed by officials.

Genuine participation also entails the active involvement of people in the planning process and is enhanced by their interaction with experts through educational methods that increase the influence farmers can exert upon the program planning process. However, it has been noted that the realities of Tanzania and other African countries may not support truly participatory approaches (Zaman, 1992). This argument has been partially responsible for the emergence of agricultural extension approaches that promote the transfer of technology through tightly managed organizations as a prerequisite for successful extension practices. On the other hand, advocates of participatory extension approaches provide little insight as to how to go about resolving the contradictions and paradoxes participation unveils when introduced into systems with rigid power structures and long histories of top-down approaches to decision-making.

This study is an attempt to provide further insight into the complex phenomenon of participation by comparing two strategies for agricultural development through extension approaches which are perceived to differ in the extent to which they incorporate participatory methodologies in the planning, implementation, and evaluation of their programs. The approaches are the Training and Visit System (T&V) and the Sasakawa Global 2000 Program (SG 2000), an example of the non-governmental organization (NGO) approach. The study also examines the extent to which the two approaches have promoted or enhanced participation benefits. The specific purposes of the study were:

1. Ascertain levels of farmers' participation in the T&V and SG 2000 extension approaches.
2. Develop an understanding of factors which may enhance farmers' participation.

The T&V program in Tanzania was launched in 1986 as part of the National Agricultural and Extension Rehabilitation Program, funded by the World Bank. Major features of T&V are (a) professionalism, or building of a professional...
extension service, (b) single line of command, (c) concentration of effort, (d) time-bound work or operating in a regular and timely fashion, (e) field and farmer orientation, (f) regular and continuous training, and (g) linkages with research (Benor & Baxter, 1984).

The SG 2000 program in Africa was launched in 1986 by Ryoichi Sasakawa of Japan in collaboration with former U.S. President Jimmy Carter and Nobel Peace Prize laureate Norman Borlaug. Six countries in Africa are currently implementing the program, and each has modified the SG 2000 approach to fit its own situation. However, common features of the program are (a) improving productivity in staple food crops grown by small-scale farmers, (b) use of locally generated research technology, (c) effective use of local extension staff, (d) field orientation and strengthening the research-extension-farmer linkage, (e) bringing about immediate and significant benefits to farmers by using well-managed and large demonstration plots, and (f) supplying in-kind farm credit to farmers organized in small groups or clusters (Borlaug, 1989).

Methodology

Sources of data for the study were farmers participating in the two approaches, extension workers responsible for the approaches, and official documents and records containing historical, organizational, and evaluative information. The study used two interview schedules: one for farmers, and one for extension workers.

A purposive sample of four districts representing major agricultural zones in Tanzania was selected: Babati district represents the Northern Highlands; Dodoma and Singida districts the Central Plateau; and Mbeya district the Southern Highlands. Dodoma and Babati districts are covered by both extension approaches. Singida district has T&V and other minor extension programs but is not covered by SG 2000. Mbeya district implements the SG 2000 and other programs but not the T&V program.

A two-stage, random sampling procedure was used to yield a total sample of 300 farmers. First, 30 villages were selected, then 10 farmers per village. In Dodoma and Babati, random samples of 10 villages per district were selected. However, in Mbeya and Singida, only five villages per district were selected since a smaller number of villages were involved. In each village, all farmers covered by the program were included in the sample frame. In each selected village, the village extension officer (VEO) was included in the study. The ten farmers and the VEO from each village were interviewed individually. The interviews in each district were conducted by an extension worker who was trained for this purpose. A total of four interviewers were involved in gathering the data. In addition to the individual interviews, qualitative data were collected through focus group interviews held in four villages in Dodoma district, two villages covered by the SG 2000 program and two covered by the T&V program. Each focus group consisted of 6 to 8 farmers and was tape-recorded with the permission of the participants. One of the authors doing the field work for the study facilitated the focus group interviews. Analysis of the focus group data was an ongoing activity and involved a “consideration of words...nonverbal, frequency, extentiveness, intensity, specificity of responses, and big ideas,” (Krueger, 1994, p.133) and was further refined by reordering of the major themes after transcribing.

Quantitative data from the personal interviews were analyzed using the Statistical Package for Social Sciences (SPSS). The analysis included descriptive statistics and the chi square, t and Kruskal-Wallis tests.

As pointed out earlier, the selection of villages for the study was based on whether they were recipients of the SG 2000 program or the T&V program. However, while conducting interviews, it was revealed that some farmers had been targeted by both programs. There was a total of 85 such cases. The remaining 215 interviewees consisted of 62 farmers who had
participated only in the SG 2000 program and
153 farmers who had participated only in the
T&V program. The study findings are based on
comparing data collected from these two distinct
groups.

Findings

Farmers' Characteristics

As can be noted in Table 1, out of five farmer
characteristics considered in the study, one
characteristic (size of farm) was differently
represented in the two approaches. The T&V
participants cultivated significantly larger areas
of land both in the 1994 and the 1995 seasons.
Another characteristic, age of farmers, was also
different in the two approaches. SG 2000
participants were, on the average, 5.5 years
older than T&V participants. There were no
significant differences between the two
approaches in regard to gender, level of
education, and leadership position.

Farmers' Participation

One purpose of the study was to find out the
extent to which the two approaches allowed for
balanced involvement in extension
programming activities. Data presented in
Table 2 show that farmers in both approaches
did not feel sufficient provisions were made to
involve them in the planning process.
Regarding the four planning activities, the
percentage of farmers who felt they were
involved to a great extent ranged between 4.8% and 19.4%
in the SG 2000 group, and between
7.9% and 13.7% in the T&V group.

Table 1
Percentages and Means of Certain Farmer Characteristics in the SG 2000 and T&V Approaches

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Category</th>
<th>SG 2000 (n=62)</th>
<th>T&amp;V (n=153)</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Men</td>
<td>80.6</td>
<td>90.2</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>19.4</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Less than primary</td>
<td>29.0</td>
<td>26.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>62.9</td>
<td>69.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Secondary &amp; higher</td>
<td>8.1</td>
<td>3.9</td>
<td>1.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Leadership Position</td>
<td>Leaders</td>
<td>46.8</td>
<td>39.2</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>Non-leaders</td>
<td>53.2</td>
<td>60.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Measure | Mean | Mean | t-value
Size of Farm | 1994 hectares | 1.8 | 2.9 | -3.26**  |
|         | 1995 hectares | 1.9 | 3.2 | -3.21**  |
| Age     | Years     | 46.6 | 41.1 | 2.67**  |

** p ≤ .01
It is interesting that all but 1 of the 26 extension workers (5 SG 2000 and 21 T&V) in the study agreed that farmers were not involved to any appreciable extent in any of the planning activities. What is most revealing, however, is some of the remarks of farmers who participated in the focus group interviews. One farmer participating in SG 2000 stated, “…in actual fact, the project was not initiated by the people here, but, when extension authorities thought of where to initiate project demonstration plots, they also included our village, starting with ten farmers.” Another farmer commenting on SG 2000's supporting only one crop, Tegemeo (sorghum variety), said:

In this village, there might be a person who dreams every day of planting pearl millet, another for Tegemeo, yet another would like to grow peanuts, but they don't have the technology. Others want to grow cassava. I would like the Ministry of Agriculture (extension programs) to consider our position. (Agricultural programs) should give us various courses that are acceptable in our area, be it cassava, pearl millet, Tegemeo, sunflower, every crop so that a farmer doesn't get stuck while there is a way out. Therefore, I would request training for every crop that would grow well in our area, so that if one crop fails, such as Tegemeo, I will be rescued by cassava; this is a way to food security.

There was considerably more farmer involvement in the implementation phase of programs, especially SG 2000. The differences between SG 2000 and T&V were highly significant in regard to all implementation activities. For all but one activity (organizing field days), from one-third to three-fourths of the farmers in the SG 2000 group indicated they were greatly involved in implementation activities: 35.5% organizing study tours; 43.5% training others; 62.9% planting demonstrations; 77.4% mobilizing resources. In contrast, the highest figure for great involvement in any of the implementation activities for T&V was 28.8%. Extension workers' responses confirmed farmers' reactions. All 21 T&V extension workers indicated that farmers were not greatly involved in 4 of the 5 implementation activities, whereas 3 of the 5 SG 2000 extension workers interviewed indicated that farmers were greatly involved in training others; 4 felt that they were greatly involved in mobilizing resources, and all 5 felt that farmers were greatly involved in planting demonstrations.

Even with relatively high participation in implementation, farmers in the focus groups were still critical of some activities. For example, in regard to selecting farmers for study tours, one farmer referred to his friend's selection this way: “(he) was selected, but we don't know what he went to learn there. Maybe he just went there to see wild animals in the Serengeti National Park, using the Sasakawa ticket. When he came back, he refused to join the program. You see, we interested farmers were left out.”

As far as participation in the evaluation process was concerned, neither extension approach allowed for high involvement, even though SG 2000 seemed to involve farmers more, especially in impact assessment, compared to T&V. Only 10.5% of the T&V group indicated they were involved to a great extent compared to 33.9% of the SG 2000 group. Extension workers' reactions and focus group comments also confirmed little if any farmers' participation in evaluation activities.

Activities Enhancing Participation

The extent to which the two extension approaches utilized training, participatory small groups, learning materials, and indigenous knowledge to enhance participation is shown in Table 3. While both approaches made extensive use of farmers’ training, few allowances were made to encourage farmers to train other farmers. Most training was provided by the VEWs. Both approaches made use of farmers’ small groups; however, a relatively small proportion of farmers (39.5% SG 2000 and 25.7% T&V) indicated that their selection to these groups was based on mutual interest. In the case of T&V, both leaders and VEWs were
involved in assigning farmers to the groups, while SG 2000 participants were assigned for the most part by VEWs. SG 2000 supplied significantly more learning materials such as magazines, leaflets, and posters and made slightly more concerted efforts to adapt recommended technical practices to the indigenous knowledge of farmers than did T&V.

Benefits

The study employed four indicators of program benefits: increases in crop yields, livestock productivity, family food security, and family income. Farmers were asked to indicate to what extent their participation in the extension programs helped them to receive these benefits. Their responses ranged from “it didn't help them at all” to “it helped them a great deal.” Data presented in Table 4 show that 61.3% of the participants in SG 2000 felt their participation helped them greatly to increase family food security; 50.3% said the same about increase in crop yields; 37.1% about increase in family income; and 27.4% about increase in livestock productivity. The corresponding values for T&V were around 9% for all four benefits. The majority of the 21 T&V VEWs (62% or more) felt that participating in T&V did not enable farmers to receive great gains. None of the SG 2000 VEWs said the same about farmers.

Table 3

Farmers’ Responses to the Use of Participation Enhancing Activities in SG 2000 and T&V Approaches

<table>
<thead>
<tr>
<th>Used</th>
<th>Not Used</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SG 2000</td>
<td>T&amp;V</td>
</tr>
<tr>
<td>Training*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmers’ training</td>
<td>95.2</td>
<td>95.4</td>
</tr>
<tr>
<td>Farmers training others</td>
<td>13.8</td>
<td>13.6</td>
</tr>
<tr>
<td>VEWs as trainers</td>
<td>100.0</td>
<td>99.3</td>
</tr>
<tr>
<td>Small Groups*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmers’ small groups</td>
<td>67.7</td>
<td>90.8</td>
</tr>
<tr>
<td>Mutual interest selection</td>
<td>39.5</td>
<td>25.7</td>
</tr>
<tr>
<td>Assigned by leaders</td>
<td>25.6</td>
<td>77.1</td>
</tr>
<tr>
<td>Assigned by VEWs</td>
<td>86.0</td>
<td>97.1</td>
</tr>
<tr>
<td>Supplying Learning Materials*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td>41.9</td>
<td>22.9</td>
</tr>
<tr>
<td>Books</td>
<td>27.4</td>
<td>24.2</td>
</tr>
<tr>
<td>Leaflets</td>
<td>56.5</td>
<td>19.6</td>
</tr>
<tr>
<td>Posters</td>
<td>46.8</td>
<td>13.1</td>
</tr>
<tr>
<td>Adapting Indigenous Knowledge*</td>
<td>24.2</td>
<td>11.8</td>
</tr>
</tbody>
</table>

* n: SG 2000 = 58; T&V = 147
* n: SG 2000 = 43; T&V = 140
* n: SG 2000 = 62; T&V = 153
* n: SG 2000 = 62; T&V = 153
* Chi-square not valid
* p ≤ .05
** p ≤ .01
participating in SG 2000. Farmers told numerous stories during the focus group interviews indicating their satisfaction with the gains they had made as a result of participating in SG 2000.

Conclusions and Implications

Neither T&V nor SG 2000 employed genuinely balanced participatory approaches in their extension programming efforts. There was more emphasis on getting farmers to implement programs than on making provisions to involve them in planning what was to be implemented or evaluating the processes or outcomes of their programs. It was clear that SG 2000 achieved a much higher rate of participation in the activities designed to promote its program objectives than T&V was able to achieve. However, this could be largely due to the allocation of more resources to these activities compared to T&V.

Both extension approaches relied on traditional methods and techniques to enhance farmers’ participation in their program. These methods and techniques invest decision-making power in the agency and its representatives, rather than give a voice to farmers to renegotiate the organization and operation of participation-enhancing methodologies. For example, training was introduced as a one-way process, with the agency selecting who was to be trained, what the training would be in, who would be the trainer, where the training would take place, and how it would be conducted. Other opportunities for participation were approached in a similar manner. The consequences of these actions were the typical giver-receiver, donor-beneficiary, knower-not knower dualities that have permeated most agricultural and rural development programs.

While farmers participating in SG 2000 reported achieving significantly greater benefits compared to those participating in T&V, neither approach seemed to allow for mechanisms to promote self-generating resources to ensure continuity, confidence, and hope. One farmer commented on the SG 2000 program which was being phased out of their village in the Dodoma district by likening it to helping a toddler walk: “You would teach him till he learns to walk on his own,” he said, referring to what he considered a premature phasing out of the program. Farmers repeatedly spoke of participation not being an act pursued individually but as lateral interaction amongst farmers within a village and across villages, as well as vertical interaction with agricultural experts, policy makers, bankers, input suppliers, and the marketing sector. They stressed the importance of working and interacting with all these sectors as a mutual support team.

While it is important that farmers get early, recognizable benefits, such as increased crop yields, it is also important that programs aim at helping them empower themselves to embark on a dynamic and self-propelling participatory process. There are no specific techniques that can be applied across the board to ensure sustained participation and empowerment. Every program needs to create opportunities that respond to its specific socioeconomic, cultural, political, and environmental realities. In retrospect, looking at this particular case in Tanzania, the following actions might have paved the way for enhancing empowerment through participation:

1. Making sure that adequate investments were made for educational activities and materials, in addition to the usual investments for supplying production inputs. Participatory farmer training, study tours, field days, and farmer-to-farmer training opportunities did not receive adequate allocations.

2. Programs could have been aimed at helping farmers identify alternative solutions to their problems rather than prescribe recommendations that did not address farming as a system. As farmers in the study suggested, the programs should have provided a variety of options so that they “don’t get stuck in the way,” as one farmer put it, if the recommended practice did not work.
3. Extension programs could employ participatory mechanisms for accessing, assessing, documenting, disseminating, and re-evaluating indigenous knowledge. Farmers in the focus group discussions mentioned that while medical doctors have made good progress in promoting indigenous practices, agricultural researchers and extension workers lag far behind. Participatory, farmer-managed research plots, researcher-farmer-extension worker field days, and village-based meetings in workshops could help in promoting development and use of indigenous knowledge.

4. Coordination with agri-support services is also important. Initially, a participatory program may provide services to a small group of pioneer farmers. However, representatives of the agri-support community should be invited to join in planning, implementing, and evaluating activities. Their involvement is more likely to ensure development of appropriate mechanisms to provide services for farmers when a program has been phased out.

References


Mpesha, M. A. L. (1976). The effect of participation in decision-making on commitment to Ujamaa work: Special project. Morogoro, Tanzania: Department of Rural Economy and Extension, Faculty of Agriculture and Forestry.


Endnotes

TANU - Tanganyika African National Union was the ruling party from 1961 to 1977 when it changed its name to C.C.M. (Chama cha Mapinduzi or the revolutionary party) which still rules today.
BURNOUT, JOB SATISFACTION AND WORK SITUATIONS AS PERCEIVED BY
DISTRICT EXTENSION OFFICERS, ONDO STATE, NIGERIA

Robert Agunga, Associate Professor
Department of Agricultural Education
The Ohio State University
203 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH 43210
614/292-0202
614/292-7007 (fax)
agunga.1@osu.edu

Christian Ojomo, Manager
Earle C. Clements Job Corps Center
2302 U.S. Highway 60
Morganfield, KY 42437
502/389-2419 ext. 187

Seung Il Na, Lecturer
Department of Practical Arts Education
Taegu National University of Education
Taegu Metropolitan City, South Korea
53 651-5369 (fax)
saint@nownuri.nowcom.kr

Outstanding Research Presentation

This paper is one of five outstanding research papers from the Twelfth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., March 28-30, 1996.

Abstract

Agricultural extension workers in developing countries face many constraints such as poor working conditions and unfavorable government policy support for agriculture. The question is whether under these challenging circumstances extension workers still view their profession with pride. A study of district extension officers in Ondo State, Nigeria was conducted to answer this question. Their perceptions of burnout, job satisfaction and work situations were studied. It was found that in spite of significant economic hardships in Nigeria, motivation of extension administrators remains high. The study contributes to Extension’s knowledge base by identifying other types of incentives for extension workers besides salaries.

Introduction

Decades of a persistent food crisis in the developing world, particularly Africa, coupled with budgetary crises, threaten the future of Extension. There is common admission that Extension has not fulfilled the purpose for which it was established, namely to eradicate poverty and hunger through increased food production (Benor & Harrison, 1977; Najjar, 1980). Extension professionals are also criticized for "...not doing enough, not doing it..."
well, and not being relevant” (Rivera, 1991, p. 9). Antholt (1991) noted that if Extension is to be useful in the 21st century, it must learn to operate in an increasingly complex, interdependent, rapidly changing, and resource-stressed world. Woog, Kelleher, and Turner (1992) contended that a credible extension system must “…accommodate the problems and challenges associated with complexity, sustainability, and the need to consider human values, judgment and perceptions” (pp. 5-6).

Clearly, these operational and intellectual demands of having to do more with less in a resource-stressed Third World environment could mean frustration on the part of extension professionals in developing countries. How do district extension administrators in Nigeria feel about their jobs in terms of burnout, satisfaction and other concerns? This is the question addressed in this paper. Many studies in the United States and other industrialized countries have helped improve our knowledge of job stress or burnout and satisfaction. However, work on these issues in developing countries is limited. This study contributes to filling this void.

**Extension Conditions in Nigeria Necessitating the Study**

The Federal Republic of Nigeria is located on the west coast of Africa and covers an area of 923,768 sq. km. or 356,700 sq. miles - about the size of California, Nevada and Arizona combined (Nelson, 1982). It is bounded by Benin on the west, Cameroon on the east, Niger and Chad to the north, and the Gulf of Guinea to the south. The 1991 census estimated the population of Nigeria to be 88 million, and this is projected to reach 115 million by the year 2000. Nigeria is composed of about 300 ethnic groups and languages. Hausa, Yoruba and Ibo are the predominant language and ethnic groups (Metz, 1992). The literacy rate is about 40%.

Although Nigeria is a predominantly agricultural country, the discovery of oil has many Nigerians abandoning farming for get-rich-quick jobs in the oil fields. The result is that Nigeria which was self-sufficient in food production in the early 1960s now depends heavily on food imports (Metz, 1992). Falling oil prices and a ballooning population forced the government to re-emphasize agriculture, as evidenced by the Fifth National Development Plan of 1988-92, which stressed agricultural self-sufficiency.

Not only did agricultural development in Nigeria witness a long period of neglect, starting from the mid-1960s to the late 1980s, as a result of the oil boom, but Extension also suffered. Atala (1986) stated:

> Extension services have been understaffed and the workers have been underpaid, ill-equipped, under-trained, …consequently, they have low status and low work motivation relative to workers in other sectors of government ministries. (p. 14)

Atala added that Extension in Nigeria is “still slow and unexciting,” implying that extension workers are unhappy and take no pride in their performance. This study was carried out largely in an effort to test the assumption that extension workers in a resource-stressed environment lack motivation and do not look upon their job with pride.

This study was carried out in Ondo State, one of 30 states in Nigeria. The State is divided into six zones and each zone is headed by a zonal director of agriculture. The Ministry of Agriculture and Natural Resources in Ondo State is responsible for formulating extension policy. Ondo State extension is based on the Training and Visit System as the state currently enjoys a major agricultural development project financed by a loan from the World Bank. The overall objective of this project is small farmer development. Therefore, extension features prominently in this project. The extension component of the Ministry of Agriculture and Natural Resources is composed of two parts: Communication Support and Extension. These are represented at the national, zonal and district levels. Extension workers collaborate with
subject matter specialists in areas such as agroforestry, women in agriculture, livestock and fisheries.

**Burnout and Extension Productivity in Nigeria**

How a worker feels about his or her job has an impact on productivity. If the worker feels that his or her role is ambiguous or cannot see any future prospects for that position, negative stress or burnout is likely to occur and poor performance will result. Potter (1985) defines burnout as a reduction in one's motivation to work. The concept of motivation is difficult to define. Lawler (1973) addresses the concept at length. He notes that motivation is the “…single most important determinant of performance” (p. 1). However, he fails to define motivation except to say that “…the distinguishing characteristic of motivated behavior is that it is goal-directed” (p. 2). He concludes that motivated behavior is one that “…is under central or voluntary control” (p. 3). Thus, in the work organization, the challenge for administrators is to create a suitable environment whereby people voluntarily aspire to excel. Lawler notes that money plays an important part in motivation but adds “…just as organizations differ in what they can do to influence motivation, people differ in what motivates them to work” (p. 7). He notes that overall job performance of a worker is a function of his/her ability plus motivation.

Closely related to motivation and performance (or output) is the notion of job satisfaction, or “…affective attitudes or orientations on the part of individuals toward jobs” (Lawler, 1973, p. 62). He notes that job satisfaction is related to absenteeism and turnover (or resignations), both of which are very costly to organizations. In his view, “…satisfaction is a function of the amount of rewards a person receives and the amount of rewards he(she) feels he(she) should receive” (p. 84).

Potter (1985) describes the burnout process: "It begins with small warning signals: feelings of frustration, emotional outbursts, withdrawal, health problems, alienation, substandard performance and the increased use of drugs and alcohol" (p. 2). Freudenberger (1980) defines burnout: “To deplete oneself. To exhaust one’s physical and mental resources. To wear oneself out by excessively striving to reach some unrealistic expectation imposed by oneself or by the values of society” (p. 16).

Newcomb and Clark (1985a) identify four stages of burnout. The first is enthusiasm. At this stage, one has high hopes, high energy and sets high expectations for oneself. The second stage is stagnation. Here, one is still doing the job but is no longer thrilled by it. The third stage is frustration where one begins to develop self-doubt and question one’s own ability to get the job done. The last stage is apathy whereby one simply does enough to get by, putting in the barest minimum to avoid losing one’s job.

Newcomb and Clark (1985b) note that burnout is likely to occur where workers face role ambiguity, dim career prospects, tight economic times, and frustration. The question is whether the economic hardships prevalent in developing countries including Nigeria (Borgin & Corbett, 1982), affect the way extension administrators perceive their roles and the satisfaction derived from performing these roles.

**Objectives of the Study**

Against this backdrop of poor government support for Extension, the purpose of the study was to determine the perceptions of district extension officers in Ondo State, Nigeria in terms of burnout, job satisfaction and work situations.

The specific objectives of the study were:

1. To describe the characteristics of district extension officers.

2. To determine burnout as perceived by district extension officers.

3. To determine job satisfaction as perceived by district extension officers.
4. To determine perceptions of district extension officers regarding work situations and opportunities.

5. To identify problems perceived by district extension officers.

Methodology

The population for the study consisted of all district extension officers in Ondo State of Nigeria (N=30). Because of the relatively small number, the entire population was used for the study. A questionnaire was developed by the researchers based on a review of relevant literature on Extension and burnout. The questionnaire consisted of questions eliciting demographic information, and perceptions regarding burnout, job satisfaction, work situations, promotion and salary, and problems and issues faced by district extension officers. Perceptions of district extension officers regarding burnout and job satisfaction were obtained using a series of statements and a 6-point Likert scale of disagreement-agreement. A total of 19 statements comprised this portion of the questionnaire on burnout and job satisfaction. With regard to work situations, 10 statements on various issues were included and the respondents were asked to indicate on a 5-point scale the extent to which the statements were true. In addition, responses were elicited to questions dealing with promotion and salary issues.

Content and face validity of the questionnaire were established by a panel of experts in Nigerian Extension. The Cronbach’s alpha reliability coefficient was .77 for the job satisfaction scale, and .84 for the Extension issues perception scale.

Questionnaires were hand-delivered by one of the authors to the Ondo State Extension Coordinator who then distributed it to the district extension officers through their regional extension directors. There are five regions in Ondo State. District extension officers had two weeks to complete and return the questionnaires to their regional coordinators, who passed these on to the state coordinator and then to the researchers. Twenty-six percent of the population did not respond. However, there was no time for follow-up. The main reason for the non-response is that many of them were either on vacation or were traveling out of state during the time the study was done.

All data were analyzed with the Macintosh SPSS/PC+ personal computer program. Appropriate descriptive statistics were used to meet the objectives of the study.

Results

Characteristics of District Extension Officers

As shown in Table 1, about 91% of the district extension officers were male, and about 82% were married. The district extension officers’ ages ranged from 20 to 50 years, with about 60% being more than 40 years old. A majority (63.3%) had the diploma in agriculture. The average number of years in Extension was 12.59.

District Extension Officers’ Feelings of Stress, Frustration or Burnout.

Table 2 describes district extension officers’ feelings of stress, frustration or burnout in their jobs. Nearly 90% of them felt that top management did not know what was happening at the local level. This could mean the introduction of national extension policies with little relevance to local situations which, in turn, could lead to district officers’ feelings of helplessness in changing strategies which may have no relevance to their areas. Over 60% of the respondents felt that there were problems of coordination, which is an indicator of stress or frustration as district development could not be approached in an integrated manner. Over 90% of district extension officers felt that they needed inservice training to help them cope with their work. Despite these concerns, many of them, nearly 60%, did not feel that their work was emotionally draining. The majority of them also did not feel a sense of frustration in spite of their admission that national extension policies
are being made without adequate understanding of problems at the local level.

Table 1

Characteristics of District Extension Officers

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>20</td>
<td>90.9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
<td>18</td>
<td>81.8</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>3</td>
<td>13.7</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Age$^1$</td>
<td>Less than 30 years</td>
<td>3</td>
<td>13.7</td>
</tr>
<tr>
<td></td>
<td>30 - 39 years</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td></td>
<td>40 - 49 years</td>
<td>11</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>More than 50 years</td>
<td>2</td>
<td>9.0</td>
</tr>
<tr>
<td>No. of Children$^2$</td>
<td>0 - 2</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td></td>
<td>3 - 5</td>
<td>12</td>
<td>54.6</td>
</tr>
<tr>
<td></td>
<td>6+</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Highest Degree</td>
<td>Diploma in Agriculture</td>
<td>14</td>
<td>63.6</td>
</tr>
<tr>
<td></td>
<td>Bachelor in Agriculture</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Master in Agriculture</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Years in Current Position$^3$</td>
<td>1</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>22.7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10</td>
<td>45.5</td>
</tr>
<tr>
<td></td>
<td>4+</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Total Years in Extension$^4$</td>
<td>Less than 10</td>
<td>8</td>
<td>36.4</td>
</tr>
<tr>
<td></td>
<td>10 - 19</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td></td>
<td>20 - 29</td>
<td>7</td>
<td>31.8</td>
</tr>
</tbody>
</table>

$^1$Mean=39.82, SD=7.35, Range=26-50
$^2$Mean=3.32, SD=2.01, Range=0-7
$^3$Mean=2.86, SD=1.46, Range=1-8
$^4$Mean=12.59, SD=8.75, Range=2-29
Table 2

Perceptions of District Extension Officers Regarding Selected Statements of the Extension System Related to Burnout

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5 6</td>
</tr>
<tr>
<td>I feel top management does not understand the local situation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 1 2</td>
<td>5 9 5</td>
</tr>
<tr>
<td></td>
<td>0.0 4.5 9.1</td>
<td>22.8 40.9 22.7</td>
</tr>
<tr>
<td>I feel emotionally drained from my work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 2 6</td>
<td>4 3 2</td>
</tr>
<tr>
<td></td>
<td>22.7 9.1 27.3</td>
<td>18.2 13.6 9.1</td>
</tr>
<tr>
<td>I feel burned out from my work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 4 10</td>
<td>5 1 1</td>
</tr>
<tr>
<td></td>
<td>4.5 18.2 45.5</td>
<td>22.8 4.5 4.5</td>
</tr>
<tr>
<td>I feel I'm working too hard on my job.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 2 6</td>
<td>6 4 3</td>
</tr>
<tr>
<td></td>
<td>4.5 9.1 27.3</td>
<td>27.3 18.2 13.6</td>
</tr>
<tr>
<td>I feel frustrated in my job.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 6 3</td>
<td>2 4 3</td>
</tr>
<tr>
<td></td>
<td>18.2 27.3 13.6</td>
<td>9.0 18.2 13.6</td>
</tr>
<tr>
<td>There are problems of coordinating extension work across different departments of agriculture at the district level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 0 5</td>
<td>7 7 1</td>
</tr>
<tr>
<td></td>
<td>9.1 0.0 22.8</td>
<td>31.8 31.8 4.5</td>
</tr>
<tr>
<td>District officers need frequent inservice training on communication.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 0 1</td>
<td>6 6 8</td>
</tr>
<tr>
<td></td>
<td>4.5 0.0 4.5</td>
<td>27.3 27.3 36.4</td>
</tr>
<tr>
<td>Top management provides me with adequate support.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 6 10</td>
<td>3 0 0</td>
</tr>
<tr>
<td></td>
<td>13.6 27.3 45.5</td>
<td>13.6 0.0 0.0</td>
</tr>
<tr>
<td>I wish I had more training to deal with the demands placed upon me at work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 0 0</td>
<td>3 6 12</td>
</tr>
<tr>
<td></td>
<td>4.5 0.0 0.0</td>
<td>13.6 27.3 54.6</td>
</tr>
<tr>
<td>I feel that my job responsibilities are increasing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 0 0</td>
<td>2 6 13</td>
</tr>
<tr>
<td></td>
<td>4.5 0.0 0.0</td>
<td>9.1 27.3 59.1</td>
</tr>
</tbody>
</table>

Scale: 1=Very strongly disagree, 2=Strongly disagree, 3=Disagree, 4=Agree, 5=Strongly agree, 6=Very strongly agree

Job Satisfaction as Perceived by District Extension Officers

Table 3 shows district extension officers’ level of satisfaction with their jobs. They conveyed mixed feelings about how satisfied they were with their work. The majority of them felt that the Extension Service is not a better employer than other government organizations. District extension officers were about evenly divided on the question of whether the work they did was worth the salaries they received. On the other hand, the majority of the respondents felt proud of their jobs, felt that they had accomplished worthwhile things, and were pleased to be working for Extension. Nearly 60% of them, however, felt that the Extension Service would be more efficient if privatized.

Perceptions of District Extension Officers Regarding Work Situations

Table 4 shows district extension officers’ views about their work situations. Responses were elicited on a 5-point scale of the extent to which different aspects of work were true in their personal situation. A majority of them felt that they were not being asked to do things for which they were not trained. On the other hand, they were about evenly divided. They also felt that the criteria for evaluating job performance were made known to
them. A small proportion of the respondents indicated they were responding to more than one supervisor, and practically nobody experienced conflict between employer expectations and personal integrity.

Salaries and Opportunities for Promotion

Table 5 shows district extension officers’ perceptions of their opportunities in terms of promotion and salary. About one-half of the respondents felt that there was good opportunity for promotion, and a majority of them did not see their jobs as dead-ends. However, an overwhelming majority of the respondents were disappointed with their salaries. Over 80% said their incomes were not enough to meet normal expenses. Concern was also expressed about the lack of security against bad times.

Table 3

Perceptions of District Extension Officers Regarding Selected Statements of the Extension System Related to Job Satisfaction

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3</td>
<td>4 5 6</td>
</tr>
<tr>
<td>The Extension System is a better employer than most other government</td>
<td>No. 3 3 6</td>
<td>1 6 3</td>
</tr>
<tr>
<td>organizations.</td>
<td>% 13.6 13.6 27.4</td>
<td>4.5 27.3 13.6</td>
</tr>
<tr>
<td>I feel the work I do is not worth the benefits I receive.</td>
<td>No. 4 5 3</td>
<td>1 3 6</td>
</tr>
<tr>
<td></td>
<td>% 18.2 22.8 13.6</td>
<td>4.5 13.6 27.3</td>
</tr>
<tr>
<td>In general, the Extension System meets the needs of farmers.</td>
<td>No. 1 1 2</td>
<td>10 4 4</td>
</tr>
<tr>
<td></td>
<td>% 4.5 4.5 9.1</td>
<td>45.5 18.2 18.2</td>
</tr>
<tr>
<td>The Extension System will be more efficient if it is privatized.</td>
<td>No. 4 2 4</td>
<td>4 5 3</td>
</tr>
<tr>
<td></td>
<td>% 18.2 9.1 18.2</td>
<td>18.2 22.7 13.6</td>
</tr>
<tr>
<td>I feel very energetic.</td>
<td>No. 2 0 1</td>
<td>2 12 5</td>
</tr>
<tr>
<td></td>
<td>% 9.1 0.0 4.5</td>
<td>9.1 54.6 22.7</td>
</tr>
<tr>
<td>I am proud of my job.</td>
<td>No. 1 0 1</td>
<td>4 8 8</td>
</tr>
<tr>
<td></td>
<td>% 4.5 0.0 4.5</td>
<td>18.2 36.4 36.4</td>
</tr>
<tr>
<td>I have accomplished many worthwhile things in the job.</td>
<td>No. 2 0 1</td>
<td>4 9 6</td>
</tr>
<tr>
<td></td>
<td>% 9.1 0.0 4.5</td>
<td>18.2 40.9 27.3</td>
</tr>
<tr>
<td>I am pleased to work for the Extension System.</td>
<td>No. 0 2 2</td>
<td>8 6 4</td>
</tr>
<tr>
<td></td>
<td>% 0.0 9.1 9.1</td>
<td>36.3 27.3 18.2</td>
</tr>
<tr>
<td>I feel my job has a good future.</td>
<td>No. 1 1 2</td>
<td>6 6 6</td>
</tr>
<tr>
<td></td>
<td>% 4.5 4.5 9.1</td>
<td>27.3 27.3 27.3</td>
</tr>
</tbody>
</table>

Scale: 1=Very strongly disagree, 2=Strongly disagree, 3=Disagree, 4=Agree, 5=Strongly agree, 6=Very strongly agree
Table 4
Perceptions of District Extension Officers Regarding Their Work Situations

<table>
<thead>
<tr>
<th>Statement</th>
<th>Extent to which true(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>I am expected to perform tasks on my job for which I have never been trained.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I have the resources to get my job done.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I am able to satisfy my needs for success and recognition in my job.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>My supervisor asks for one thing, but really wants another.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I know the basis on which I am evaluated.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I feel conflict between what my employer expects me to do and what I think is right or proper.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I have more than one person telling me what to do.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I feel good about the work I do.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>I am proud of what I do for a living.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>When I need a vacation, I take one.</td>
<td>No.</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
</tbody>
</table>

\(^a\): 1=Rarely true, 2=Occasionally true, 3=Often true, 4=Usually true, 5=True most of the time

Problems Experienced and Incentives Desired by District Extension Officers

Open-ended questions were asked to gain a better understanding of the problems experienced by district extension officers and the incentives and resources needed by them.

Major problems identified were inadequate funding for staff and the conduct of research; funding not being released on time by government and other agencies; agricultural tools not being provided; tractors not available at the right time; agro-chemicals too costly; and discouraging attitude of participating farmers.

Many of the respondents said they needed reliable transportation for field visits; more opportunities for study tours in and outside the country; regular promotions, coupled with regular prompt payment of salaries and transportation claims; and more local and overseas training.
Table 5

Promotion and Salary Issues as Perceived by District Extension Officers

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th></th>
<th>No</th>
<th></th>
<th>Not sure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Promotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good opportunity for advancement</td>
<td>10</td>
<td>45.5</td>
<td>11</td>
<td>50.0</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Opportunity somewhat limited</td>
<td>14</td>
<td>63.6</td>
<td>6</td>
<td>27.3</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Dead-end job</td>
<td>4</td>
<td>18.2</td>
<td>10</td>
<td>45.5</td>
<td>8</td>
<td>36.3</td>
</tr>
<tr>
<td>Regular promotion</td>
<td>6</td>
<td>27.3</td>
<td>15</td>
<td>68.2</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Unfair promotion policy</td>
<td>12</td>
<td>54.5</td>
<td>8</td>
<td>36.4</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Infrequent promotions</td>
<td>14</td>
<td>63.7</td>
<td>7</td>
<td>31.8</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Salary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income adequate for normal expense</td>
<td>4</td>
<td>18.2</td>
<td>18</td>
<td>81.8</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Less than I deserve</td>
<td>18</td>
<td>81.8</td>
<td>4</td>
<td>18.2</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Barely live on income</td>
<td>13</td>
<td>59.1</td>
<td>5</td>
<td>22.7</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Bad</td>
<td>13</td>
<td>59.1</td>
<td>7</td>
<td>31.8</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Income provides luxuries</td>
<td>4</td>
<td>18.2</td>
<td>18</td>
<td>81.8</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Insecure</td>
<td>8</td>
<td>36.4</td>
<td>9</td>
<td>40.9</td>
<td>5</td>
<td>22.7</td>
</tr>
</tbody>
</table>

Conclusions

A major conclusion drawn from the study is that while the position of district extension officer may be prestigious, the salary is not necessarily attractive. Although questions were not asked to explore this, the experience of two of the researchers in Nigeria and West Africa suggests that district officers seek supplementary income outside their jobs to make ends meet. Having to take a second or even a third job could have a detrimental effect on productivity since district officers are unlikely to commit themselves fully to their professional tasks.

The majority of respondents did not feel that there were good opportunities for professional development. However, they also did not feel that they were in dead-end jobs. The majority also felt that their salaries were less than they deserved, and that the reward system barely kept them and their families alive.

Under these circumstances, one could conclude that these officers stay on their jobs, perhaps because they do not perceive there are good alternative jobs. It appears that while their jobs may not be financially rewarding, they are socially attractive as district extension officers are often well respected in their communities.

The value of this study is that it points to other avenues for increasing staff motivation, besides salaries. However, the study is limited in terms of suggestions for what these forms of incentives are or could be.

This study was focused on one state in Nigeria. Therefore, the conclusions drawn are limited to that state. However, since the established structure and operational procedures of Extension are similar in the several states of the country, it would appear that if this study was replicated in other states, the findings would likely be similar.

The Government of Nigeria could use the findings of this study to alleviate adverse employment conditions which would decrease the possibility of burnout, and improve job satisfaction among district level administrators in the Extension Service of Ondo State. Consideration could also be given to replicating the study with field agents working at the village level, as well as in other countries in Africa.
References


Abstract

The purpose of this study was to identify the perceptions of College of Agriculture undergraduate students regarding internationalization of the curriculum, student participation in international activities and barriers to student participation in international activities. There is student support for internationalization of the curriculum but there are significant barriers that must be addressed if progress is to be made in this area. International activities have an impact on student perceptions regarding internationalization. The results of the study suggest that instructors and the College of Agriculture need to develop more programs and use a broader spectrum of methodologies to add a global perspective to the curriculum.

Introduction

Internationalization of the curriculum is an issue facing institutions of higher education nationwide, and colleges of agriculture are no exception. As the economy, and the daily lives of Americans become more intertwined with those of other nations and other peoples, it is imperative that our graduates have the global understanding necessary to function in society. Groennings (1990) stated, “As the general purpose of education is to prepare students for the world in which they are living, there is a growing expectation that the curriculum must enlarge our students’ understanding of the new international circumstances and of peoples and cultures beyond our borders” (p. 11). Lambert (1989) stressed the “… need to introduce an international dimension into the education of students while they are still in school and college so that they will be able to perceive and put into context events that take place abroad or across our internal cultural divisions” (p. 2). Placing the responsibility for internationalization on the curriculum originates from the expectation that the curriculum should respond to changes in society in order to better prepare students for the future. The future is global, especially in agriculture.
Schuh (1989) explained that “U.S. farmers no longer compete with the farmers down the road or the farmers in other states. They now compete with farmers in Argentina, Brazil and other potentially important countries. Moreover, their markets also are in other countries” (p. 8). McBreen (1992) indicated that while there appears to be no lack of understanding of the international impact on agriculture, “… almost no real progress has been made to ensure that graduates of our colleges of agriculture are internationally literate” (p. 253). Henson and Noel (1988) stressed the important responsibility for colleges of agriculture to broaden their understanding of the world and their ability to generate, apply, and transfer relevant information to better prepare their graduates and clientele to work and live in an interdependent world. Internationalization of the curriculum in colleges of agriculture should be a priority in order to prepare today’s students for life in the 21st century.

**Purpose and Objectives**

The overall purpose of this study was to assess the perceptions of undergraduate students regarding the internationalization of the curriculum in the College of Agriculture (COA) at Iowa State University (ISU). The specific objectives of the study were:

1. Identify undergraduate students’ perceptions regarding the internationalization of the College of Agriculture curriculum.

2. Assess student involvement in international activities.

3. Identify possible barriers to student participation in international activities.

4. Identify demographic characteristics of participants in the study.

**Methodology**

The population for this study included all undergraduate students enrolled in the College of Agriculture at Iowa State University in the fall of 1994. A random sample of 1,000 students was selected from enrollment lists provided by the Agriculture Student Services Office. Of those surveyed, 524 respondents provided usable data for this study.

A mailed questionnaire was used to collect data. The instrument was divided into four parts based on the objectives of the study.

Part one was designed to identify undergraduate students’ perceptions regarding the internationalization of the curriculum in the College of Agriculture. A 5-point, Likert type scale was used to study the students’ perceptions regarding the internationalization of the curriculum. Students were asked to respond to 11 statements by circling one of the descriptors: strongly disagree, disagree, neutral, agree, or strongly agree.

Part two sought to assess student involvement in international activities, including the international content of their courses in the College of Agriculture. Students were asked to indicate their experiences abroad, foreign languages studied, local involvement in international activities, and the internationalization of their courses in the College of Agriculture.

Part three dealt with identification of possible barriers to student participation in international activities. Students were asked to indicate what prevented them from participating in study abroad programs, travel courses, on-campus international activities, and international internships.

Part four identified the respondents’ demographic characteristics. Students were asked to indicate their gender, age, classification, majors and minors, place where they were raised, and their citizenship. In addition, there was a question at the end of this
section asking students to write any other comments or suggestions they had concerning the internationalization of the curriculum in the College of Agriculture.

Faculty and graduate students in the Department of Agricultural Education and Studies served as a panel of experts to help establish face and content validity of the instrument. The researchers drew upon the international experience and the curriculum development knowledge of these individuals to improve the survey instrument.

Early and late respondents were compared to determine if differences existed between the groups (Miller & Smith, 1983). At the .05 level, no significant differences were found between early and late respondents. The timing of this study made it impractical to contact non-respondents. The reminder postcard was mailed shortly before the semester break, hence the researchers would have had to wait four weeks before attempting to contact non-respondents. The researchers felt fortunate to have received 524 returned surveys from undergraduate students.

To examine the reliability of the grouped items in the instrument, Cronbach’s alpha was used to analyze the 11 items in the perception scale. Cronbach’s alpha coefficient for this scale was found to be .90, which is considered to be quite satisfactory.

Means, modes, standard deviations, frequencies, and percentages were calculated to summarize the data. t-tests were computed to relate selected demographic variables to the perception scale. The alpha level was established a priori at .05 for all tests.

**Results**

Analysis of the demographic information revealed that a majority of the respondents were male, between the ages of 18 and 22, and raised on a farm in Iowa. This information was typical of students in the College of Agriculture at the time of this study.

When assessing student involvement in international activities, it was found that a majority of the students in this study had never been abroad. Of the 40% who had visited another country, most traveled to Western Europe, Canada, or Mexico. These trips were typically short-term and for pleasure. Most of the respondents spent between one week and one month in the country or region they visited, and their time was spent vacationing.

English was the native language of all but a few of the respondents. Spanish, French, and German were the most commonly studied foreign languages. Most of the students had studied a foreign language for two years or less and reported their level of fluency as limited. Only 12.8% of the respondents reported that they had never studied a foreign language.

Approximately 35% of the respondents indicated that they had participated in a local international activity. These activities ranged from hometown cultural celebrations to international food festivals at the university. Common locations for such events were university campuses and churches.

Respondents indicated that instructors infused a global perspective in their courses through discussion of their own experiences, films, slides, and videos, and by comparing and contrasting systems. Figure 1 identifies methods used by instructors in the College of Agriculture to infuse a global perspective into the curriculum as reported by students in the college.

When asked to rate the international content in courses taken by them in the College of Agriculture, a majority of the respondents (over 50%) rated courses in twelve of the seventeen departments in the college as low, or having little or no international content. The data in Table 1 indicate the percentage of students giving ratings of low, medium, or high for the international content in courses in the College of Agriculture by department.
Respondents indicated barriers that prevented them from participating in international activities. Major barriers to study abroad were financial resources and interruption in the academic program. Participation in travel courses was hindered by financial resources, while interruption in the academic program was a barrier to work abroad. Lack of interest was indicated as the major barrier to participation in on-campus international activities. Lack of awareness of opportunities was indicated by respondents as a barrier to participation in all international activities (study abroad, travel courses, on-campus international activities, and work abroad). Participation was low among respondents in all international activities: study abroad (2.1%), travel courses (4.5%), on-campus international activities (11.6%), and work abroad (1.6%).

When the data from the perception scale were analyzed it was found that overall, the respondents held slightly favorable perceptions regarding the internationalization of the curriculum in agriculture. Most respondents (79.4%) agreed with the statement “Today’s college graduate in agriculture needs an understanding of agricultural systems around the world.” The fewest respondents (11.6%) agreed with the statement “There is no need for the College of Agriculture to pursue internationalizing its curriculum because students will gain a global perspective elsewhere.” The data in Table 2 provide the information concerning student responses to the eleven perception statements.

Various demographic characteristics had a significant association with how respondents perceived the internationalization of the curriculum in the College of Agriculture. More likely to agree with the perception statements were females, seniors, students from large cities, and international students.

The data from this study suggested that participation in international activities made a significant difference in student perceptions regarding internationalization of the curriculum. Even students who had participated in local international activities were more likely to agree with the perception statements regarding the internationalization of the curriculum in the College of Agriculture (Table 3). Table 4 shows the differences in perceptions between students who had studied abroad and those who had not.
Table 1

Percentage Ratings on the Amount of International Content in Courses in the College of Agriculture by Department as Perceived by Students in the College (n=524).

<table>
<thead>
<tr>
<th>Department</th>
<th>n</th>
<th>Percentage Rating&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Biochemistry and Biophysics</td>
<td>185</td>
<td>90.3</td>
</tr>
<tr>
<td>Genetics</td>
<td>160</td>
<td>83.8</td>
</tr>
<tr>
<td>Zoology</td>
<td>194</td>
<td>79.4</td>
</tr>
<tr>
<td>MIPM&lt;sup&gt;b&lt;/sup&gt;</td>
<td>98</td>
<td>77.6</td>
</tr>
<tr>
<td>Agricultural Systems Technology</td>
<td>203</td>
<td>74.9</td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>49</td>
<td>71.4</td>
</tr>
<tr>
<td>Plant Health and Protection</td>
<td>62</td>
<td>66.1</td>
</tr>
<tr>
<td>Food Science and Human Nutrition</td>
<td>96</td>
<td>63.5</td>
</tr>
<tr>
<td>Entomology</td>
<td>62</td>
<td>56.5</td>
</tr>
<tr>
<td>Animal Ecology</td>
<td>164</td>
<td>56.1</td>
</tr>
<tr>
<td>Horticulture</td>
<td>101</td>
<td>55.4</td>
</tr>
<tr>
<td>Agricultural Education and Studies</td>
<td>175</td>
<td>52.0</td>
</tr>
<tr>
<td>Agronomy</td>
<td>364</td>
<td>45.3</td>
</tr>
<tr>
<td>Animal Science</td>
<td>331</td>
<td>44.7</td>
</tr>
<tr>
<td>Forestry</td>
<td>52</td>
<td>44.2</td>
</tr>
<tr>
<td>Economics (Agricultural)</td>
<td>291</td>
<td>39.2</td>
</tr>
<tr>
<td>Sociology</td>
<td>276</td>
<td>23.9</td>
</tr>
</tbody>
</table>

<sup>a</sup>Percentage of respondents indicating level of international content, according to the following scale: “low” = almost no international content, “medium” = some international content, “high” = a great deal of international content.

<sup>b</sup>Microbiology, Immunology, and Preventative Medicine.

Table 2

Perception of Undergraduate Students Regarding Internationalization of the Curriculum in the College of Agriculture at Iowa State University.

<table>
<thead>
<tr>
<th>Perception Statements</th>
<th>n</th>
<th>Perception Score&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Today’s college graduate in agriculture needs an understanding of agricultural systems around the world.</td>
<td>520</td>
<td>3.99</td>
</tr>
<tr>
<td>ISU students should develop a greater awareness of international issues in agriculture.</td>
<td>520</td>
<td>3.85</td>
</tr>
</tbody>
</table>
Table 2 (cont.)

Perception of Undergraduate Students Regarding Internationalization of the Curriculum in the College of Agriculture at Iowa State University.

<table>
<thead>
<tr>
<th>Perception Statements</th>
<th>n</th>
<th>Perception Score&lt;sup&gt;a&lt;/sup&gt;</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>% Agreeing&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors should give examples from other countries’ agricultural systems when teaching about U.S. systems.</td>
<td>524</td>
<td>3.84</td>
<td>4.00</td>
<td>0.87</td>
<td>76.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The curriculum of the COA should reflect a knowledge of the global community.</td>
<td>520</td>
<td>3.80</td>
<td>4.00</td>
<td>0.84</td>
<td>69.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professors in the COA should infuse global awareness into the courses they teach.</td>
<td>519</td>
<td>3.66</td>
<td>4.00</td>
<td>0.95</td>
<td>62.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The COA should offer more international experiences for students.</td>
<td>523</td>
<td>3.60</td>
<td>3.00</td>
<td>0.87</td>
<td>51.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The COA should encourage students to participate in international internship programs.</td>
<td>524</td>
<td>3.53</td>
<td>4.00</td>
<td>0.91</td>
<td>52.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding international issues helps a graduate of the COA get a job.</td>
<td>524</td>
<td>3.40</td>
<td>3.00</td>
<td>0.98</td>
<td>47.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The COA should have a global awareness course requirement.</td>
<td>523</td>
<td>3.07</td>
<td>4.00</td>
<td>1.15</td>
<td>42.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The COA should have a foreign language requirement.</td>
<td>520</td>
<td>2.42</td>
<td>2.00</td>
<td>1.23</td>
<td>19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is no need for the COA to pursue internationalizing its curriculum because students will gain a global perspective elsewhere.</td>
<td>520</td>
<td>2.33</td>
<td>2.00</td>
<td>.95</td>
<td>11.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Scale: 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree.

<sup>b</sup>Students selecting agree or strongly agree.
Table 3

Differences in Perceptions of Students Regarding Internationalization of the Curriculum in the College of Agriculture, Iowa State University by Involvement in Local International Activities.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have participated</td>
<td>182</td>
<td>3.69</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Have not participated</td>
<td>331</td>
<td>3.41</td>
<td>0.63</td>
<td>4.67*</td>
</tr>
</tbody>
</table>

* p \( \leq \) .05, two-tailed.

Table 4

Differences in Perceptions of Students Regarding Internationalization of the Curriculum in the College of Agriculture, Iowa State University by Participation in Study Abroad.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have studied abroad</td>
<td>11</td>
<td>4.31</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Have not studied abroad</td>
<td>505</td>
<td>3.49</td>
<td>0.66</td>
<td>4.09*</td>
</tr>
</tbody>
</table>

* p \( \leq \) .05, two-tailed.

**Conclusions and Recommendations**

The overall conclusion of this study was that students support internationalization of the curriculum, but there are significant barriers that must be addressed if progress is to be made in this area. Additionally, the following conclusions and recommendations were made based on the findings of the study:

1. Students tend to support internationalization of the curriculum so long as no additional course requirements are imposed. Therefore, it is recommended that the College of Agriculture internationalize existing courses rather than require students to take specific “international” courses.

2. This study found that very few students in the College of Agriculture had participated in any kind of international activity, other than foreign language study. In addition, the findings indicated that international activities made a significant difference in student perceptions regarding internationalization of the curriculum. Therefore, it is recommended that the College of Agriculture find ways to encourage students to participate in different kinds of international activities, from on-campus events to international work and study opportunities.

3. Student responses seemed to indicate that the methods used by instructors in the College of Agriculture to infuse a global perspective into their courses were not effective. According to student responses, the methods used most often by instructors were all passive. Therefore, it is recommended that the College of Agriculture encourage all faculty members to infuse a global perspective into their courses through more active methods.

4. The findings of this study indicated that significant barriers existed which prevented students in the College of Agriculture from participating in international activities. These barriers included financial resources, interruption in the academic program, and lack...
of awareness about opportunities. Therefore, it is recommended that the College of Agriculture explore ways to assist students with the costs of study abroad programs and travel courses. It is also recommended that the college work with student advisors to integrate international experiences into programs of study. Additional methods of advertising international activities should be developed in order to inform students about these opportunities.

**Educational Importance**

This study has provided important information about the perceptions held by undergraduates in the College of Agriculture at Iowa State University regarding the internationalization of the curriculum, student participation in international activities, and barriers to student participation in international activities.

The results of this study may assist the College of Agriculture in determining how to proceed with its internationalization efforts, as well as how to get more students involved in the existing international activities available on campus. This study may also prompt other colleges within Iowa State University, as well as other institutions, to undertake similar studies to determine their students’ perceptions regarding the internationalization of the curriculum.

This study has special implications for agricultural education. The study found that participation in international activities made a difference in student perceptions regarding the internationalization of the curriculum. Agricultural education was founded on the principle of experiential learning. The Department of Agricultural Education and Studies may be able to assist other departments in the College of Agriculture in developing classroom activities (such as case studies and role playing) to enhance the international content in their courses. The wide variety of instructional techniques available for giving instruction and managing learning need to be shared with all College of Agriculture faculty. Agricultural education as a discipline could enhance the learning environment in all other areas of agriculture, specifically as it pertains to internationalization.

**References**


COMMENTARY

INTERNATIONAL AGRICULTURAL CONSULTANTS: A PERSPECTIVE

James E. Diamond, International Agricultural and Extension Education Consultant
The Pennsylvania State University
Department of Agricultural and Extension Education
323 Agricultural Administration Building
University Park, PA 15802
(814) 863-7868
(814) 863-4753
jim_diamond@agsc.cas.psu.edu

Abstract

A consultant is a contracted, self-motivated individual who gives experienced and skilled advice or service in a field of special knowledge or training. Agricultural experts contemplating being a consultant need to think about the modus operandi they perceive themselves impersonating. This paper reflects a perspective for recruiting qualified consultants; assumptions; essential qualifications required of consultants; accepting the terms of reference; getting the work done; working with counterparts; maintaining meaningful communication with colleagues; giving answers; disparities between the international consultant and national counterpart; commitment to established project goals; working for, working with, and being with people; and resources for carrying out agricultural education programs in other nations.

Introduction

A British agricultural volunteer who traveled to the Philippines to work at a Catholic parish was given the following advice:

If you are here because you pity us; if you came because you think you have the answers to our problems; if you expect that, after two years, you can look back to a project which YOU have established, then there is no place for you in the parish. But if you are here because you have unanswered questions of your own; if you have come to give as well as to receive; if after two years you will be happy to leave behind farmer-friends who have become more self-confident and proud as human beings and as farmers because of the friendship you have shared with them, then please stay with us (Tiongco, 1994, pp. 2-4).

The expectations portrayed by this advice caution consultants to think about the modus operandi they should embrace while working in other countries. This paper presents my perspective of a modus operandi and the essence of details that could increase the likelihood of agricultural consultants leaving behind self-confident friends, farmers and/or researchers.

Consultant

The United States Agency for International Development (USAID) defines a short-term consultant as “…a contracted employee appointed to serve less than one year in a cooperating country” (USAID, 1981, p. 1). A consultant is a self-motivated individual who gives experienced and skilled advice or service in a field of special knowledge or training (Johnson, 1982, p. 9). According to Metzger (1993, p. 13), “…the role a consultant must play is to look past the obvious symptoms to identify the root cause of the mismanagement; then to develop solutions that call for dysfunctional behavioral and value modifications that are acceptable to the perpetrators!” While
accepting USAID’s, Johnson’s and Metzger’s varying interpretations of consultants as being germane to international agricultural education, extension and research, agricultural consultants need to understand the nature of the consulting profession. In my opinion, agricultural consulting is more than giving advice and making money. It’s a process and a professional service that evolves around humanity’s unsteadiness, uncertainties, and insecurities inherent in working with people immersed in development programs.

Karlson (1991, p. 8) wrote that consultants “...are usually perceived as outsiders working on the inside.” Karlson’s interesting perception applies to both international and domestic agricultural consultants. On the basis of what Johnson, Metzger and Karlson indicate in their writings, consultants are outsiders who work on the inside as problem-solvers, idea persons, devil’s advocates, hatchet persons, task masters, processors, implementors, catalysts, advisors, stabilizers, listeners, talkers, specialists, generalists, managers, motivators, and as quasi-employees who work alone or with the client’s staff. They also assert that international consultants must speak the technical language of both government and industry.

Implication

Professional agricultural and extension educators and researchers participating in international consultant assignments help to enlighten and enhance the wisdom of their institution’s approach to education. Consultants learn to appreciate and understand the characteristics of other cultures; learn to speak another language; acquire financial resources for their institution; recruit international undergraduate and graduate students; enhance their institution’s image and advance its capability to participate in long-term projects abroad. Furthermore, they bring back to their college classrooms first-hand experiences and knowledge that address severe food shortages, unrestrained livestock diseases, raging insect infestations, creeping desertification, unsparring deforestation, uncontrollable soil erosion, to name just a few of the critical issues that affect the well-being of our fellow human beings. Eleanor Roosevelt said, “Understanding is a two-way street.” International assignments can have a two-way impact on the agricultural educator’s and researcher’s understanding of people and their respective societies.

Assumptions

An assumption often made is that the skills required to be a successful consultant are the same as the skills required to be a successful educator. While there are some similar attributes of the two pedagogues, there are also some obvious differences. According to Metzger (1993, p. 14), “...consultants do not have the authority required to implement their recommendations.” Metzger’s assertion especially applies to international assignments. International clients can do one of two things with a consultant’s agricultural recommendations. They can either accept or reject the recommendations.

Another assumption made by educators according to Metzger (1993, p. 13) is “...all you need to know and bring to the client is your expertise in your field.” Nothing could be further from the truth, especially for international agricultural consultants on the continents of Africa, Asia and South America. One needs to be a “jack of all trades”. However, being a “jack of all trades” can risk one’s credibility.

When consultants do not have the agricultural background or experience to give an acceptable solution or recommendation to specific questions or problems, it is more in accord with the mores of most societies to say “I don’t know” than to pretend to know the answer. People will usually sense that the consultant is pretending. This results in her or his credibility being jeopardized immediately.

The notion that agricultural consultants using participatory and farmer-first rhetoric would reveal a discipline committed to gender-sensitive development is not accurate according
to Walker (1996, p. 248), who claims that “...participatory and people-centered development as practiced by international agricultural and extension educators does not necessarily include women.” Walker (1996, p. 250) asserts further that “...international and extension educators may be familiar with and talk about women and development but that does not mean they operationalize that understanding.” Agricultural consultants need to abandon their attitude towards gender bias if Walker’s claims are accurate.

Qualifications

Agricultural educators and researchers who desire to do consulting work need to satisfy three basic criteria before considering overseas assignments. They must like people, get along with all kinds of people, and have a compassionate attitude towards helping people help themselves (Diamond, 1987, p. 23; 1984a, p. 22). In addition, there are three broad qualifications that greatly enhance the effectiveness of consultants: much practical experience complemented with advanced academic credentials in the technical area as defined in the job description (Erickson, 1983, p. 23); previous overseas experience in other nations (Lee, 1987, p. 20); and ability or desire to speak the host country’s national language (Lee, 1987, p. 20).

Beyond these qualifications, the consultant must possess three important virtues, namely patience, persistence, and perseverance (Diamond, 1984b, p. 1). These three virtues are cardinal prerequisites for Metzger’s (1993, pp. 14-15) eight personal traits that clients expect and assume to be an integral part of the consultant’s repertoire. They are:

1. Empathy (ability to relate to issues of concern).
2. Energy (stamina, fortitude, and spunk to implement change).
3. Ethics (purity, decency, impartiality, respect, and honesty).
4. Positive thinking (optimism in the face of despondent situations).
5. Self motivation (inner urging and encouragement).
6. Team player (sharing and working with others).
7. Self-fulfillment (jubilation for client accomplishment).
8. Mobility (flexible and willing to travel).

Ideally, educators who possess most of these traits can be effective agricultural consultants.

Terms of Reference

A contracted consultant must thoroughly understand the terms of reference as determined by the host nation and/or contractor. The terms of reference usually describe the job assignment. The consultant has the professional responsibility to accept the job description and not attempt to amend it without first obtaining the full authorization of the contracting organization.

Counterparts

When counterparts are assigned to a consultant, the terms of reference should describe the role of each person. It may even be necessary to clarify specific roles. Clarity of the roles for both the consultant and the host country counterpart is essential. Counterparts are not to be made to feel like bystanders. They need to be an integral part of the project and should have equal if not more responsibility than the consultant. Riggan (personal communication, April 29, 1972) once instructed a cadre of new Peace Corps volunteers “Your mission here is to work yourself out of a job.” Perhaps that’s the mission of agricultural consultants as well: work themselves out of a job.

In the 1970s, assigning national counterparts to work with foreign agricultural consultants became an important component of international agricultural education efforts. Counterparting in the 1990s still remains a significant component of effective consulting work.

Counterpart Comprehension
Agricultural consultants must be cognizant of the fact that counterparts are generally knowledgeable of the characteristics of their society. Effective consultants should have an accurate and justifiable perception of the characteristics that describe both the people and environment they are supporting. Hence, consultants need to confer often with the counterparts regarding the values, mores, expectations, customs, growing season characteristics, soil conditions, crop and livestock pests, and other features of the environment where they are working.

Agricultural consultants must share their experience, knowledge, and skills with counterparts to adequately prepare them for carrying on program or project responsibilities after consultants complete their term. It is imperative that consultants teach counterparts to be competent in carrying on the program unassisted. Agricultural consultants who fail to fulfill this function can cause a well-conceived program to falter after they leave. Such failures may jeopardize the long-range goals of an overall agricultural development program.

Disparities

Normally, there are many disparities between the consultant and the counterpart that can jeopardize their working relationship. The consultant who is sensitive to such differences can handle the issue pragmatically. Disparities include marital status, gender, educational level, salaries, work experience, work ethics, superstitions, material wealth, and religious views, to name a few. Counterparts frequently perceive agricultural consultants as having access to tremendous wealth merely because they come from a more affluent nation. This perception can be correct when compared with their local economic standards. Agricultural consultants need to deal with this issue diplomatically so as not to jeopardize the intent and quality of the working relationship (Diamond, 1984b, p. 1).

Commitment by the agricultural consultant and the counterpart to the goals of the sponsoring organizations and the project result in a meaningful working relationship. Differences in commitment to established project goals can rapidly lead to a breakdown in communication and cooperation. Mutual dedication and commitment are like a team of horses pulling together. Pulling together towards a common end can generate a positive interaction that conceivably could go far beyond the overall intent of the project.

Communication

In his views of the consultant and counterpart relationship, Ascroft (1971, p. 7) stated, “Courtesy requires that honored guests in African countries not be criticized; the result is lack of communication between technical assistance personnel and local nationals, that can seriously hamper development projects.” Within the context of Ascroft’s view, the consultant has the professional responsibility to look beyond this facade and initiate efforts to maintain meaningful communication with the assigned counterpart. Positive interaction and communication are essential to achieve the project goals described in the contract.

Responsible consultants are sensitive to the cultural background of the local counterpart and people. Here is an example of how lack of such sensitivity can affect relationships and the project. A short-term consultant in Swaziland was teaching an introductory computer course. As most instructors do in America, he openly praised certain people in the course when they satisfactorily achieved a specific skill. In the Swazi culture, such an act of praise is not readily accepted by peers. It caused envy, dissension, jealousy, and discord amongst class peers that ultimately jeopardized the course objectives. Efforts to learn the cultural characteristics of both the counterpart and local society can enhance the likelihood of successful experiences.

Getting The Work Done
Agricultural consultants recruited from academia usually possess specific knowledge and/or skills requested by host nations. However, for various reasons, agricultural educators and researchers tend to have a strong temptation to focus on getting the work done. Consultant job descriptions frequently describe a workload that is often far beyond what is feasible in the described time frame. Tiongco (1994) addressed this issue in the following statement:

"Don’t (sic) be a TOB (Task Oriented Bastard). Don’t come to our countries with the objective that after your term of service, YOU shall have left behind a project or programme (sic) that YOU have established and can boast about. If this is what YOU are going to do, there will be no guarantee that the scheme will survive successfully after YOU leave. ...under-achievement of objectives may be preferable if, during the time in the country, more importance is placed on the transfer of and growth in knowledge and skills. And of even greater value is that friendship with people will help them grow stronger, more confident, and proud of the color of their skin, the shape of their nose, their race, and culture” (Tiongco, 1994, p.3).

If Tiongco’s statement is true for the majority of nations involved with development projects, consultants on long and short-term assignments need to heed the essence of his concern.

Answers

Personal observations made in other countries disclose that agricultural consultants tend to find it irresistible and more desirable to give answers to questions or solutions to problems. Instead, it is probably more important to help people to think through their questions, identify alternative solutions to their questions, discuss the ramifications of the options, then allow the people to answer their own questions and take responsibility for their choices. Consultants who give the answers or solutions must take full responsibility for their many ramifications. As a matter of course, consultants should not be perceived as knowing all the answers. Sometimes the best answer may not be proposing a solution, but discussing the question with counterparts and local people to simply understand. Finally, consultants should thoroughly understand the question before responding. This is an idealistic perspective, and sometimes not a very practical outlook. Nevertheless, consultants who align their endeavors with this idealistic approach, when feasible, will increase their probability of achievement.

Presence with People

Karlson (1991) described presence with people as (a) working for people, (b) working with people, and (c) being with people. According to Karlson, working for people has generally dominated past development efforts in other nations. Target groups are normally identified, and fore-ordained project objectives are implemented by long-term and short-term foreign experts with the assistance of counterparts. Generally, the target groups have little or no input in developing the project objectives or perceived outputs (p. 9).

Working with people means assisting people and waiting for them to define their needs, and then supporting their objectives and action plan. It involves the consultant entering into a trusting relationship with people, surrendering one’s autonomy and sense of power and together identifying what really needs to be done (Karlson, 1991, p.9).

Being with people means experiencing in one’s own life what it is to be poor and oppressed. It means living in a village scenario, setting aside one’s own agenda, work plans and strategies, and simply feeling with the poor their situation. Because of the time restrictions of a consultancy, it is difficult for college educators or researchers to develop an appreciation for the implications that poverty has on people’s sense of themselves, their tensions, the contradictions between poor and non-poor, and to recognize
through this that all of us are a part of the problem (Karlson, 1991, p.10).

Agricultural consultants who lack long-term international experience in the field need to be cognizant of these three dimensions of presence with people. Each dimension has its own unique character that influences the consultant’s reasoning, emotions, attitudes, impressions, opinions, outlook, patience, considerations, and approach to implementing a work strategy.

Resources

Agricultural educators and researchers from donor nations are accustomed to having the appropriate resources for teaching effective agricultural education programs. Such resources, to name a few, include modern buildings, salaries, equipment, laboratories, classrooms, office, libraries, electricity, heat, water, desks, chairs, instructional materials, and transportation. However, these resources are often limited or nonexistent in some nations. Consultants should appreciate these limitations and have the creative ability to cope. One often has to make the best of the available resources while still being charged with the responsibility of achieving project objectives.

Messiahs

It does not take much to arouse feelings of guilt in agricultural consultants, especially inexperienced consultants, when they experience the burdensome lifestyles of the poor they are to help. Such feelings can cause them to perceive the people as objects of pity and themselves as their savior. Instead, one should hold in esteem the sufferance of people who daily survive poverty and oppression. Generally, people’s pride is at stake when consultants from other nations visit their land because they are not proud of having to live in poverty and oppression. Agricultural consultants need to have the disposition to embrace the poor and at the same time help them to solve problems themselves. For sustainability, people need to have a chance to learn from their mistakes, regardless of the society or socio-economic level to which they belong. Agricultural consultants can help people help themselves simply by pointing out the lessons to be learned from making a mistake.

Summary and Conclusions

A reality check shows that USAID will look very different by the year 2000 because of reduced congressional funding. J. Brian Atwood (cited in Walker, 1996, p. 252) current administrator of USAID, in a recent speech to the Advisory Committee on Voluntary Foreign Aid, stated that “…by the year 2000, USAID will have been radically transformed. We started in 1993 with a presence in over 120 countries, with over 70 missions. By the year 2000, our programs will be targeted on approximately 75 countries, with no more than 30 full sustainable missions”. In view of this anticipated reduction in program funds, numerous international education issues and opportunities will still need to be addressed, and international agricultural consultants will have to play a significant role.

There are no recipes for agricultural consultants to follow when performing the duties and roles of a specific assignment. Many personal, governmental, environmental, and societal variables can affect the outcomes of a well-conceived consultant assignment. Inexperienced agricultural consultants need to think about the modus operandi they should embrace while working in other countries. The modus operandi of agricultural consultants should reflect patience, persistence, perseverance, empathy, energy, ethics, positive thinking, self motivation, team player, self-fulfillment and mobility. One should like people, be able to get along with all kinds of people, and have a compassionate attitude towards helping people help themselves.

People expect agricultural consultants to have much practical experience with advanced academic credentials in the technical area, previous experience in other nations, a desire to speak the host country’s national language and the technical language of both government and
agri-industry. However, when one does not know the answer to a question, one has to be able to say “I don’t know” rather than to pretend to know the answer.

Agricultural consultants must share their experience, knowledge, and skills with counterparts to adequately prepare them for carrying on project responsibilities after consultants complete their term. There can be many disparities between a consultant and counterpart and those who are sensitive to such differences can handle issues pragmatically.

Individuals who lack long-term international experience in the field need to be cognizant of the three dimensions of presence with people: (a) working for people, (b) working with people, and (c) being with people. Each dimension has its own unique character that influences the consultant’s reasoning, emotions, attitudes, impressions, opinions, outlook, considerations, and approach to implementing a work strategy.

Agricultural consultants should be gender-sensitive and help people to think through their questions, identify alternative solutions to their questions, discuss the ramifications of the options, then allow the people to answer their own questions and take responsibility for their choices.

Often, agricultural education resources in some nations are limited or nonexistent. These limitations require agricultural consultants to have creative abilities to cope, while at the same time, have a disposition to embrace the poor and help them to solve their problems themselves.

References


Ngong-Massah, E. N. (1982). Communication skills for development professionals. Unpublished manuscript, South Dakota State University, Department of Rural Sociology, Brookings, SD.


COMMENTARY

RURAL SOCIO-ECONOMIC CHANGES IN INDIA: IMPLICATIONS FOR AGRICULTURAL EXTENSION

Rama Radhakrishna, Research Associate
The Pennsylvania State University
323 Agricultural Administration Building
University Park, PA 16802-2601
(814) 863-7872
(814) 863-4753 (fax)
rradhakr@psupen.psu.edu

Outstanding Research Presentation

This paper is one of five outstanding research papers from the Twelfth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., March 28-30, 1996.

Abstract

The purpose of this study was to assess rural development efforts in India, describe social and economic changes and their impact on rural communities, and suggest implications for agricultural and extension educators and development planners. Socio-economic changes that have occurred in India over the past four decades were examined using census data and published literature. Changes were documented in family structure and functioning, education, and social life. Economic changes included increased agricultural and industrial production, liberalization of economic and export policies, increase in number of rural bank branches, and increased coverage of rural masses under various credit programs. In the agrarian sector, the number of holdings increased while the average size of land holdings declined. Implications of these changes for rural development and agricultural extension pointed out in the paper include designing programs for farm families with limited land, public policy education on land subdivision, fragmentation and consolidation, and developing linkages with other disciplines to better understand problems and suggest solution strategies.

Rationale

Socio-economic, agrarian and political changes occurring in peasant communities around the world have influenced the nature and pattern of rural community development. India, a predominantly agricultural country, where 70% of the population depends on agriculture for its livelihood, has experienced a similar phenomenon. National planning over the last five decades that the country has been independent has emphasized a comprehensive program of rural community development, including an extension system designed to improve the livelihood of farming and rural families. During this time, significant changes have taken place in the social and economic life of the nation which have had an impact on rural community development programs and the agricultural extension system. It is the purpose of this paper to assess rural development efforts in India over a period of four decades, describe social and economic changes and their impact on rural communities, and suggest what implications these changes might have on the nation's community development programs/extension system. Secondary information sources, primarily census data and published literature, were reviewed as the basis for documenting macro-level social and
economic changes that have occurred in rural communities over the period covered by this study.

**Indian Rural Development Programs**

A comprehensive, nation-wide community development program was launched in India in 1953. The program, covering all aspects of rural life, including agriculture and related activities, education, health, cottage and small scale industries, and rural infrastructure, was housed in national and state departments of community development. Also organized in 1953 were national-state extension systems for agricultural development aimed at maximizing agricultural production and income of the farming population. These systems came under the purview of departments of agriculture and animal husbandry.

Within a decade, the entire country was covered by the community development program, operating in over 5,000 community development blocks, staffed with development professionals and technicians. Holdcroft (1984) provided a critical assessment of the positive and negative aspects of the program. He concluded that while the program was successful in providing basic developmental needs to people in rural areas, the underlying goal of social and economic amelioration of rural life was not accomplished. Poverty and food scarcity were not reduced, rather they became more widespread; disparities of wealth between large farmers and peasants increased; the program was not accepted by and did not reach the poor, and became a top-down bureaucratic empire that ignored agricultural production. The view most often expressed for the poor performance of the program was that political leaders did not understand either the complexity of the problem or the time required to transform traditional rural societies. Furthermore, the program enlarged social services more rapidly than rural incomes, and was unsuccessful in improving the conditions of the poor, the sharecroppers and the agricultural laborers. In short, both aspects of rural poverty, low productivity and unjust distribution of wealth and resources, were not significantly changed by the community development program (Holdcroft, 1984).

The failure of the community development program shifted the focus of planning and development in the 1970s toward integrated rural development. As a result, a number of programs were initiated to address the problems of neglected segments of rural society, namely landless agricultural laborers, scheduled castes, native tribes and backward classes.

Subsequent socio-economic programs initiated under a series of national five-year plans had the twin objectives of planned economic development and narrowing the gap between the rich and the poor. Major emphasis was given in these programs to the economic and social uplift of the masses. Economic uplift programs included programs of integrated rural development, growing high yielding varieties, backward area development, drought-prone area development, intensive agricultural development, and communication and infrastructure development (water, power, roads and telecommunications). Social programs to improve the lot of scheduled castes, backward classes and tribes included security-free loans, land for the landless, home construction loans, and subsidies and government aid. In 1969, all major commercial banks were nationalized. For the rural masses, this move was heralded as a new era of opportunity, bringing them into the fold of institutional credit. Once again, in 1980, a number of smaller banks were nationalized to increase lending to agriculture and rural development.

In the late 1980s and through the 1990s, the national government's economic policy favored privatization in recognition of the important role of the private sector in the nation's economic development. A number of economic measures were taken to encourage private sector participation in development programs. At the international level, export and import policies were liberalized to attract foreign investment. As a result, several multi-national companies and western countries began investing in India. However, private sector involvement in...
agriculture has been small and sporadic compared with the manufacturing sector.

**Agricultural Extension System**

Agricultural development has been considered as one of the main priorities of India's rural development. The management of agricultural development in India is primarily the function of the Union and State Ministries of Agriculture through Departments of Agriculture, which, in turn, depends on its extension service. The Extension system for agricultural development can be broadly classified into two categories: (a) Union Ministry of Agriculture/State Departments of Agriculture and their network of extension services, also called the Government Extension System, and (b) extension systems of the Indian Council of Agricultural Research (ICAR) and its research institutes and agricultural universities.

The Government Extension System with its network of extension service and organization is primarily responsible for dissemination of farm technology, and educating and helping farmers to understand and use new technology on their farms. The extension system of the ICAR is primarily concerned with transfer of technology programs. The extension role of agricultural universities consists of development and advisory work, organizing and conducting training programs for subject matter specialists, extension personnel, farmers and others, communication and publication of extension literature, and maintaining public relations.

The National Extension Service started in 1953 has been organized at different levels, i.e., national, state, district, block and village. Since 1953, changes have been introduced in the extension approaches, programs, and systems. One of the major weaknesses was that the grass roots workers (village extension workers--VEWs) had a large area and a large number of farm families to work with. In addition, the professional qualification of these workers was not appropriate to the demands of new and sophisticated agricultural technology. Because of these weaknesses, a new system, the Training and Visit Extension System (T&V) was organized with financial assistance from the World Bank. Under this system, schedules of work, and duties and responsibilities of extension personnel are clearly specified and closely supervised at all levels. The main features of T&V are (a) professionalism, (b) single line of command, (c) time-bound work, (d) regular and continuous training, and (e) close linkage with research (Benor, Harrison, & Baxter, 1984). Transfer of research findings developed by agricultural scientists is achieved through training and visits. Training provides for transfer from researchers and subject matter specialists to VEWs. Visits enable transfer from VEWs to contact farmers through a scheduled program of visits to a fixed number of contact farmers. In turn, these contact farmers disseminate the information to fellow farmers.

Despite its success, T&V also had a number of weaknesses. For example, contact farmers form a very important link between the extension workers and the farming community. The success of the system depended on the functioning of these contact farmers. Several studies indicated that the selection and use of contact farmers were not completed according to guidelines. In a number of cases the same well-to-do farmers who had taken advantage of most of the extension programs were selected as contact farmers. In addition, several deficiencies were reported in terms of training programs, mobility of extension personnel, timely visits by the VEWs, and coordination with other agencies involved in agricultural production.

**Social and Economic Changes**

**Family**

Many families today are different from the standard families of the 1950s and 1960s (Kemmeyer, Ritzer & Yetman, 1994). Family structure and functions in India and many other countries are changing (Buggi, 1987).

Rural society, in general, is family-oriented in that family values, mores and goals permeate the
social structure. The traditional Indian family has been a joint or extended family. Even to this day, the ideals of joint family persist, though trends in favor of the nuclear family are emerging. Indian rural society has also been marked by two classes, rich, high-caste landlords, and poor peasants and agricultural laborers. This class structure has changed due to transformation in the agrarian sector and government policies. A new class of medium-sized farmers, mostly belonging to the middle caste, has emerged as a numerically dominant interest group which is coming to the fore of the political sphere and contributing to rural development (Buggi, 1987; Desai, 1990; Ray, 1979). This group has grown highly conscious of raising its standard of living and adopting the life style of well-to-do families.

Economy

The Indian economy has been growing at a rapid pace. Dramatic changes have occurred in the labor force and production such as the increasing number of working women, increased agricultural and industrial production, liberalization of government policies, and growth in investment (Walker & Ryan, 1990). Despite positive changes occurring in the economy, the exponential increase in population has drained the country's resources and hindered economic growth, and impeded the efforts of planners to create an egalitarian society. Furthermore, the failure of the secondary and tertiary sectors of the economy to absorb surplus labor from agriculture has added to the problem of excessive pressure of population on land-based activities (Ramanna, Bisalaiah, & Chengappa, 1986). Some of the changes significant to agriculture and rural development are discussed.

The number of large farms in India is declining and will continue to decline (Radhakrishna & Yoder, 1993). The data in Table 1 show that in 1970-71, there were 2.8 (4%) million large farms, operating on 50.6 million hectares (31%). This figure declined to 1.7 million large farms (1%) operating on 27.6 million hectares (16%) in 1990-91. By the year 2000-2001, it is projected that the number of large farms will decline to 1.3 million, operating on 20 million hectares (11%).

Data in Table 1 also indicate that in 1990-91 79% of the farmers were in the small and marginal category (owning less than five acres) operating in 32% of the total area. In contrast, 1% of large farmers (owning 25 or more acres) were operating in 16% of the total area. This finding highlights the disintegration of large farms and the predominance of small and marginal farmers who have grown in millions at the expense of large farms. Reasons for the decline of large farmers include (a) laws of inheritance and succession, (b) break-up of the joint family system, (c) excessive pressure of increasing population on agricultural land, (d) lack of off-farm employment opportunities, (e) government-sponsored land reform measures to achieve greater socio-economic equity, and (f) sub-division and fragmentation of land holdings.

Among the predominantly agricultural countries in the world, India has emphasized a major role for institutional credit in agricultural and rural development programs. Cooperatives and commercial banks are two major agencies which provide institutional credit to farmers. Although a large part of the money has flowed through cooperatives and commercial banks, the services offered by these institutions have been monopolized by the better-off sections of the rural community. Furthermore, according to the Reserve Bank of India, the suppliers of credit to agriculture are still dominated by non-institutional sources such as money lenders, large farmers, rich widows, and relatives. Interestingly though, the share of non-institutional credit in the total credit to agriculture declined from 95% in 1952 to 67% in 1982 (Desai, 1990).
Table 1

Number of Farms and Area Cultivated by Type of Farm

<table>
<thead>
<tr>
<th>Type of Farm</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large (&gt; 25 acres)&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Number&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.8 (4%)</td>
</tr>
<tr>
<td>Area&lt;sup&gt;d&lt;/sup&gt;</td>
<td>50.6 (31%)</td>
</tr>
<tr>
<td>Medium/Semi Medium (5-25 acres)&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Number&lt;sup&gt;c&lt;/sup&gt;</td>
<td>18.6 (26%)</td>
</tr>
<tr>
<td>Area&lt;sup&gt;d&lt;/sup&gt;</td>
<td>78.3 (48%)</td>
</tr>
<tr>
<td>Small and Marginal (&lt; 5 acres)&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Number&lt;sup&gt;c&lt;/sup&gt;</td>
<td>49.6 (70%)</td>
</tr>
<tr>
<td>Area&lt;sup&gt;d&lt;/sup&gt;</td>
<td>33.8 (21%)</td>
</tr>
<tr>
<td>Total</td>
<td>71.0</td>
</tr>
<tr>
<td>Number&lt;sup&gt;c&lt;/sup&gt;</td>
<td>162.7</td>
</tr>
<tr>
<td>Area&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> projections; <sup>b</sup> 1 hectare = 2.25 acres; <sup>c</sup> millions; <sup>d</sup> million hectares
(Source: Census of India, 1970-71, 1980-81, 1990-91)

The number of bank branch offices in India increased from 8,262 in 1969 at the time of bank nationalization to 53,565 in 1987 (Mahajan, 1990). Furthermore, farmer service cooperatives were organized to help small and marginal farmers, and landless agricultural laborers to pursue production activities. As a result, a large section of the rural community has come under the fold of institutional credit, which has helped develop rural communities.

Implications

Changes occurring in rural communities have implications for the design and implementation of development/extension programs. It is important that agricultural and extension educators understand and take these changes into consideration in developing systems and programs.

In the Indian rural development context, the following specific implications arising from the socio-economic changes described in this paper are being suggested for consideration by development planners and agricultural and extension educators in India. It is likely that these suggestions may be applicable to other countries that are addressing similar issues and problems through a planned agricultural and rural community development process.

1. It is expected that the observed trend of decrease in farm size will continue, and that, as a result, farmers will be less inclined to invest in land and land improvement which may lead to a drop in productivity and lowered economic viability of farms. A greater number of farm families operating small holdings as well as a greater number of small, marginal farmers and landless laborers will therefore need to be reached by extension workers. Decisions will need to be made with regard to such issues as increase in the number of extension workers to cover a larger number of projected clientele groups, the training of extension workers in terms of general and specialty subjects, the role of subject-matter specialists, and the types of
teaching methods to be used to reach a larger, more diverse client base.

2. Farmers will need to be educated about existing legislation and implementation plans related to land subdivision, fragmentation and consolidation. This type of public policy education should involve open discussion with local farmers and community leaders regarding how government policies and implementation procedures will affect current and future generations of farmers in terms of their economic well-being and conformity with cultural expectations, values and norms.

3. Extension personnel have an opportunity to develop programs which directly address the needs of people with limited land and those who are landless agricultural laborers. They can address such questions as: What changes in extension programming have occurred and/or what changes need to take place to address the needs of these groups? Has Extension examined or does it need to examine educational initiatives which would suggest alternative ways of operating individual, fragmented small land holdings? Has Extension assessed availability of the required supporting infrastructure to carry out and test such alternatives? Will Extension assume a leadership role in facilitating the establishment of demonstration projects to provide farmers with alternatives for traditional agricultural operations?

4. Changes in the rural credit scene offer Extension personnel an opportunity to capitalize on the positive aspects of this change to enhance programs. One way of achieving this is to work cooperatively with rural credit agencies and other lending institutions. Besides providing financial assistance, these institutions can advise and assist agricultural and extension educators on program priorities, plans and implementation strategies. The fact that these institutions have an established infrastructure is an added advantage in cooperating with them.

5. It is important for agricultural and extension educators to think and plan in a holistic manner in an increasingly interdependent world where problems require multi-disciplinary efforts to find solutions. Linkages need to be established among professionals in the disciplines of agricultural education, extension education, sociology, economics and anthropology both for collaborative work on practical problems in rural communities as well as cooperative research to enable better understanding of specific issues and the development of solution strategies.

6. The overriding question for Extension systems, both in India as described in this paper and in other countries, is how well these systems are positioning themselves to address the dynamic changes that are occurring in their respective nations. The Association for International Agricultural and Extension Education which is committed to promoting and studying international agricultural and rural development can assist in finding answers to this question. Organizing discourse and dialogue at its annual conference and encouraging Journal submissions on the subject are ways in which the association can contribute.

References


The European Journal of Agricultural Education and Extension (EJAEE) published quarterly from the Wageningen Agricultural University, the Netherlands, is in its fourth volume. It is an international journal dedicated to “changes in agricultural knowledge and action systems.” The journal has focused on a number of critical issues, including higher education, policy development, role of extension education, new approaches to innovation diffusion and technology transfer, to name a few. These issues show how change agents around the world are grappling with complex socio-economic and techno-ecological contexts of modern farming systems.

A collaborative arrangement with EJAEE will enable us to publish abstracts of articles published by them. They will do likewise. We hope that readers of both journals will benefit as a result.

We initiate this arrangement with selections from EJAEE complementing the themes reflected in this issue's articles. These are modifications of the abstracts which appeared in EJAEE.

Rethinking higher agricultural education in a time of globalization and rural restructuring.
W. van den Bor, J. M. Bryden and A. M. Fuller

This paper explores the consequences of globalization and rapid rural restructuring for institutions of higher agricultural learning. It is essential for these institutions to make fundamental choices. This process of priority setting should not only be based on a continuous survey of the labor market, but also on what the institutions themselves consider as challenging areas of activities. The paper discusses a number of necessary changes in the areas of targets and contents, institutional management, and professionalization and strategy of higher agricultural education. Authors advocate increased institutional networking between both agricultural universities and colleges as well as society in general, a student-centered, problem-oriented professional mode of content delivery, and proactive research and outreach strategies.

Using Agricultural Knowledge Systems: From an institutional approach to a functional extension model.
S. Brunold and U. Scheuermeier

We came across Agricultural Knowledge Systems (AKS) while searching for concepts which would help us explore ways of how extension might fit into a larger functional framework for rural development. AKS as a systemic concept for understanding information flows has been developed by Röling and Haverkort (1987), and others in Wageningen, Holland. The institutional-analytical approach of AKS is an effective model for analyzing existing connections among organizations and institutions. We've experimented with AKS to find out how it can be developed further as a tool for designing programs and projects in which extension will have to play an important part. We found that the best use of the AKS functional-exploratory approach is for participatory extension involvement of WHAT has to be done to improve a situation, HOW
must this be done to get the best effect and WHO is both competent and capable of taking up the tasks. The best use of the AKS model is when the situation for improvement and desired interactions are known.

(Eur J Agr Educ Ext 1996, 3, 2, pp 75-84)

Are traditional extension services dead or have they a role in rural development?
J. F. Phelan

Rural areas are changing and extension, if it is to remain relevant, must meet the current needs of rural people. Over 50% of farm households in Ireland will have difficulty in maintaining viability and many farm households have an increasing dependence on off-farm earned income and on social transfers. The Irish advisory service, Teagasc, strongly supports the development of a competitive agriculture and, although charging for some of its services, is still heavily subsidized by state funding. The number of people employed by Teagasc is falling and it is suffering from an embargo on the recruitment of new staff. Other broader-based rural development type extension services are emerging. A dualism exists with resource rich farms using extension's professional support and resource poor sectors relying on non-professional sources for information. The role that traditional extension services should play is now a critical issue and its response may determine whether it lives or dies.

(Eur J Agr Educ Ext 1995, 2, 3 pp 7-14)

Improving the output of agricultural extension and research through participatory innovative development and extension; experiences from Zimbabwe.
J. Hagmann, E. Chuma and K. Murwira

This paper describes the rationale for a change from conventional extension towards participatory innovation development and extension. The “Conservation Tillage Project” and the “Food Security Project” developed such an approach and have embarked on institutionalization of this approach into the agricultural extension service in Masvingo Province in Zimbabwe. Dialogue with farmers, farmer experimentation and the strengthening of self-organizational capacities of rural communities are the major elements to improved development and spreading of innovations, thus the efficiency of extension. The new approach requires a role change of agricultural extension workers from teacher to facilitator as well as appropriate methods and tools. Elements of “Training for Transformation” and Participatory Rural Appraisal (PRA) were tested and developed and were found to be effective tools. The strategy to institutionalize participatory extension is based on joining efforts and networking with other organizations, a campaign to familiarize institutional staff and a training and follow-up program for staff in the framework of organizational development. The experiences show that the attitudinal change required to implement participatory approaches is highly dependent on personalities. To have an impact on the change of attitudes a continuous medium-term training process with a close follow-up is required. The paper concludes that institutionalization of participatory approaches into hierarchically structured organizations is a highly complex intervention. In order to be successful, major changes in planning, implementation and monitoring and evaluation procedures are required. Changes of that nature require a process of at least 5 to 10 years and high commitment on the side of institutional staff on all levels and donors as well.


Typical farmers: The strategy Galjart did not explain.
J. F. da Silva Protas and I. Rebello de Andrade

The strategy used by rural extension services in rural development programs primarily in developing countries is based on the so-called “progressive” farmer. The assumption is that this farmer is able to demonstrate the value of the recommended innovations and to motivate others to adopt them. However, the recommendations adequate for progressive farmers are not necessarily the right ones for other farmers. Extension workers should not expect that participation of a small group of
“progressive” farmers would lead to a larger participation of other farmers as well. This has been one of the main problems of the T & V system. In an attempt to overcome this problem the Department of Sociology of the University of Évora is developing an alternative variant of the T & V in which “typical” farmers are chosen instead of “progressive” ones. These “typical” farmers would be divided into two groups, “high” and “low” access to resources. Because innovation typically diffuses among groups with similar resource access, the variant model would be more appropriate for effective innovation diffusion.