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NEW CHALLENGE FOR AGRICULTURAL EDUCATORS:  
THE AIAEE JOURNAL

O. Donald Meaders, Professor Emeritus  
Department of Agricultural and Extension Education  
Michigan State University

Introduction

This is the inaugural issue of the Journal of International Agricultural and Extension Education. Dr. Meaders was one of the founding members of the Association for International Agricultural and Extension Education. Because of his support for the Journal and his historical perspective of the organization he was invited to submit the following article.

Sometimes you just have to take time to say the obvious. There is an unprecedented need for agricultural education, formal and non-formal, as we move toward the twenty-first century. Increased population, greater demand for food, international trade controversies centered on agricultural products, and the obvious deterioration of the environment in many parts of the world, all are clear signals of need for more and better education, including agricultural education. More about that later.

This is a hallmark year for the AIAEE, year 1994. It marks the beginning of this Journal, The Journal of International Agricultural and Extension Education. Perhaps this Journal may be one of the means whereby we can more effectively communicate with each other, whether we be in different parts of the U.S.A. or in other parts of the world, or whether we be in non-formal or formal agricultural education.

But what do we mean when we say formal and non-formal agricultural education? There are many different meanings given for "agricultural education." And the meanings are somewhat different today from the meanings given fifty years ago. But we don't need standardized meanings! We do need to be more explicit with the meanings which are intended in our writing and speaking. Agricultural education, as used in this article, is intended to encompass the instruction about plants, animals, soils, their care and management, farm management and agribusiness, finance and policy. It may be formal or non-formal; at any level, primary through collegiate; and may be for general knowledge, avocational or vocational purposes. It is not the intention of the author that the use of agricultural education in this article be read by the reader as a reference to only that education at the secondary level and labeled "agricultural education", or only to the collegiate level education for the preparation or in-service of teachers of agriculture.

The Beginning of AIAEE

The year 1984 was another hallmark year. It was the beginning of the Association for International Agricultural Education (AIAE), later renamed as the Association for International Agricultural and Extension Education (AIAEE). This, the tenth year for the AIAEE, sees the beginning of the Journal as a complement to the work of the committees and the annual meeting as means for achieving the purposes of the Association. Congratulations to the officers and to the membership for this important step forward.

The AIAEE was, in part, an outgrowth from the efforts by some members of the Association of Agricultural Teacher Educators of America (AATEA). Many of the agricultural teacher educators from departments of agricultural education in the U.S. had served short term and/or long term assignments in developing countries, some starting in the early 1950's. Their assignments were part of the larger
development efforts by U.S. institutions to assist the countries to improve their agricultural programs, mainly for production of food and fiber, sometimes for national consumption but frequently for international markets so as to gain international currency.

At the same time there were many agricultural extension agents and specialists from the U.S. who also served short term and/or long term assignments in agricultural development projects around the world. The 1950's and early 60's saw many agricultural educators, including teacher educators and extension personnel, responding to calls to provide assistance to colleges, universities, and ministries as those countries sought to strengthen their agricultural programs.

During the same years there was a great increase in the number of international graduate students enrolled in degree programs throughout departments of agricultural and extension education. Those students became a very positive influence on both faculty and domestic students for learning about similarities and differences in cultures as well as programs.

**Agricultural and Extension Education in Development**

We have learned much during the past 50 years regarding the complex task of development, especially regarding the changing of technologies and building of institutions for increasing the quantity of food and fiber produced. At the same time we have experienced massive changes in the technology for production, processing and distribution of commodities; almost unbelievable changes in the technology for communications; and the growing worldwide interconnections for marketing and distributing both agricultural and manufactured products.

The urgent and complex tasks for improved food production and improved distribution channels, especially in drought stricken areas, such as in much of Africa, serves to stir us to make greater efforts to achieve food guarantees for everyone. But we are reminded that the solutions are not simple. The indigenous knowledge of local farmers, and their values placed on the land through generations of survival, may be a far better starting place for change than trying to start with an introduced "Western" technology.

We need more and better communication with the producers, the tillers of the soil and the livestock raisers, and the agricultural educators (both formal and non-formal) in each country. In addition, we are becoming increasingly aware of the impact of government policies which, intentionally or unintentionally, have adverse effects upon producers.

**Purpose and Target Audience of the Journal**

This Journal will provide agricultural and extension educators from around the world, not just those located in the U.S., with an opportunity to report the results of projects, innovative efforts, research, and to discuss theoretical concepts about programs. In other words it is hoped that the Journal will become another avenue of communication, to expedite efforts to achieve improved production and distribution of food and fiber, and improved quality of life for people in general.

The target audience for the Journal is not limited to the practicing professionals in agricultural and extension education. It is hoped that other professionals from fields such as sociology, agronomy, agricultural economics, animal science, agricultural engineering, foresters, education and others would gain by reading it and would share their experiences and views by contributing articles for publication.

**Some Reflections**

Permit me to reflect on some changes which have been observed in regards to both formal and non-formal agricultural education during the past fifty years here in the U.S. During the 40's
and early 50’s much of the focus was on improving production through adoption of new technology, record keeping, and management practices. The methods used by high school teachers were classroom instruction focused around the problem solving method, drawing the problems from the projects which students were encouraged to develop on the home farms; through the activities of the Future Farmers of America (FFA), a high school agricultural student organization; laboratory work in agricultural mechanics for farm mechanization and home improvement; and classes for young and adult farmers for solving farm problems of production and marketing. The clientele were mainly the sons of farmers, primarily owners of land.

Agricultural extension programs utilized on-farm demonstrations, organized meetings for farmers, the media (newsletters, newspapers and radio), and 4-H Clubs as primary methods to achieve higher levels of production. Over the years Extension and high school program content have shifted. The instructional program has broadened to include more emphasis on use of available data for planning, relating production to marketing opportunities, leadership development for individual and group action, and most recently, the international dimension for production and marketing.

As a teacher of agriculture in a small high school in Nebraska during the late 40’s and early 50’s, I helped the students learn to raise broilers through a group project. They were taught to rear and manage broilers for profit; and to market the excess birds through direct marketing methods. And to use part of the broilers for a parent-community banquet to mark the achievements of students and parents through the program. Today such a program would still be a good learning activity for students but it would not reflect many of the key components of today’s vertically integrated, large scale broiler production operations.

For both the teachers of agriculture in high schools and the county agricultural Extension agents, the individual farm and the individual farmer were starting points. Entrepreneurship was at the heart of the instruction. Very few programs for either youth or adults were focused on laborers or hired hands. As a consequence there has been neglect of potential, and obviously deserving, clientele groups such as the migrant workers, hired hands, and non-management employees. Those may be some of the most important clientele groups in many of the developing countries.

For the high school programs, the early beginnings under the Smith-Hughes Act found the funding of horticulture programs through the Industrial Education units rather than through the Agricultural Education units. Just another indication of the early narrow focus on farming and farm home related activities.

The agricultural education programs have also grown out of racially divided programs, especially in the Southern states where there were separate agricultural colleges (the 1890 Institutions), separate Cooperative Extension Services, separate high schools, and separate youth programs (4-H and FFA/NFA, the New Farmers of America).

The purpose of these few notes about the history of agricultural and extension education in the U.S. is primarily to make the point that the programs which we have today have emerged from the uniqueness of the U.S. situations. Some authors have reminded us that the strengths of U.S. agriculture may be due to at least five key factors, one of which relates directly to educational institutions such as the public schools, community colleges, and the Land Grant colleges and universities.

Bonnen (1981) has presented one of several convincing arguments for the concept of systems in relation to agricultural development. He argues that five sets of institutions have
supported the agricultural productivity and growth in the U.S.: 1) farm organizations, 2) the land grant colleges of agriculture, 3) the U.S. Department of Agriculture, 4) the private sector markets, and 5) the political institutions including the committees in the U.S. Congress and state legislatures responsible for society's policies for agriculture. To these I would add one more: the public school system including the community/technical colleges. (Or I would simply expand his second point to include the larger educational system which has included agricultural education.)

A current Development Brief, No. 3 (1992, October) from the World Bank focuses on the negative impact on agriculture of government policies which are biased against the producer. The policies, according to the report, have made agriculture the loser. The authors of that brief propose corrective action as shown below.

"To stop taxing agriculture, governments have to do more than dismantle the interventions in agricultural prices--they have, in addition, to eliminate other taxes on agriculture, reducing the protection of industry and getting the exchange rate in line with its long-run equilibrium value."

The highly publicized disagreement between the U.S. and the European Economic Community (EEC) during October-November 1992 regarding the subsidies to agriculture were another example of potential impact of national policies on the producers and on the marketing system. Little was said as to the impact that the settlement between the U.S. and EEC would, or might, have on agriculture in the Third World Countries. Do we as agricultural and extension education professionals have any obligation to try to raise questions about the impacts of such agreements on producers in countries other than our own?

The complexities of international trade and the need for greater understanding are also illustrated in the dialogue from key individuals in our society toward Japan and other countries with large exports to the U.S. As a profession we have been negligent by not educating our leaders and the general public relative to the nature and importance of those countries for the export of U.S. agricultural products. For example, in 1991 (according to Satoru Sashiwagi, Director of the International Liaison Office, International Affairs Department, Economic Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, Chiyoda-Ku, Tokyo), during difficult negotiations, some key markets (e.g., beef, fresh oranges, orange juice) in Japan were opened to U.S. products. If the U.S. were to lose the export markets for agricultural products in countries like Japan and Taiwan, it surely would affect the U.S. agricultural situation in particular and the overall economy in general.

It is very evident that agricultural education, not only for professionals in the agricultural sector but for the general public and those in the political arena, is more important in this interdependent, global-market world. This new Journal may help in the exchange of information and technology from country to country. Vitosh (1992, Summer), a crop and soil scientist at Michigan State University, reporting after a three-week trip to Europe in the summer of 1992, has commented "Europeans do a good job of translating information from us to them. It's time we started translating it from them to us."

As we look to the future, it is obvious that education in agriculture is essential for improving production and marketing of agricultural products, for improving farmer income and quality of life, and for reducing poverty. But education in agriculture, though conducted in the most effective and efficient manner, is not enough to achieve the goals of food security for nations, eliminate poverty for the people, and provide a higher quality of life for the farmers.
Agricultural education, both formal and non-formal, is part of two larger systems within all countries: the Educational system and the Agricultural system. Both of which operate in the context of the political and economic systems. Those systems vary from country to country. In the U.S. the formal agricultural education institutions at the primary through community college levels are linked most closely to the state educational systems; the higher education institutions with instruction in agriculture are linked with the state educational systems but in addition nearly always have linkages, financially, with the agricultural systems at both the state and federal levels.

Our Association for International Agricultural and Extension Education (AIAEE) has a formidable challenge ahead of it. This new Journal can play an important role for helping to achieve the objectives of improved communication and international linkages. But the reality remains in the hands of the members and the "members-to-be." Let us not hesitate to bring forth new and challenging ideas for discussion and dissemination. Let us not hesitate to discard rivalries between and among groups, but at the same time do not hesitate to form new alliances for effecting stronger programs of agricultural education.

Yes, it is obvious. There is now more need than there ever has been for agricultural education.

References


GLOBAL ISSUES: IDENTIFYING EXISTING ATTITUDES OF AGRICULTURAL AND METROPOLITAN LEADERS

Barbara G. Ludwig, Assistant Professor
Extension & International Programs in Agriculture
The Ohio State University

Outstanding Research Presentation

This paper is one of four outstanding research papers from the Ninth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., March 18, 19 & 20, 1993.

Viewed from outer space, most of the earth's surface is covered by water. No lines mark national or political boundaries and weather patterns shift without regard for religion, language or race. Yet, on earth, the perspective is altered. People tend to view "their" country as the center of the universe. (Tiedt & Tiedt, 1990). For most people in the world, direct experience with other countries and cultures is infrequent or nonexistent. Even in the U.S., with its geographically mobile society, there is a tendency to stay within our own communities and circle of acquaintances. America 2000 (1990) targets the need for an educated citizenry having the knowledge and skills to compete in a global economy. It states "all our people, not just a few, must be able to think for a living, adapt to changing environments, and to understand the world around them... We must realize that education is a lifelong pursuit" (U.S. Department of Education, pg. 35).

A study of Extension Director's in 1990 by Poston and O'Rourke indicated that clientele attitude was a key factor acting as a barrier to the globalization of Cooperative Extension programs and activities. The study identified the need for educational programs, especially those provided to clientele groups, as being necessary for globalization. Results of a 1989 Ohio State University study of Extension faculty and staff (Ludwig, 1991) produced similar results. Ohio personnel indicated a desire for in-service education related to increasing global understanding, global marketing and development, but identified one of the major barriers to internationalizing Extension in Ohio as the attitude of local clientele.

Extension prides itself on developing educational programs in response to the needs and interest of people. Skinner (1991), in an address to the American Home Economics Association, noted that in a world which is increasingly interdependent, we do ourselves and our clients a disservice if we do not prepare them for an increasingly internationalized society and economy. Skinner reaffirmed concepts outlined in Global Perspectives for Extension (U.S.D.A., 1989).

A review of literature revealed little was known about the attitudes of leaders in Ohio which help to shape their global perspectives. A need to study citizen attitudes toward other cultures, the global market place and development issues was identified. Surveying leaders from both traditional agricultural constituency and Extension's growing metropolitan clientele was identified as one way to better understand citizen attitudes towards global issues. Now that this information has been gathered, curriculum development and staff in-service education can be based on identified needs rather than assumptions.

Purpose and Objectives

The purpose of the study was to identify the attitude of Ohio agricultural and metropolitan leaders toward four international dimensions.
Objectives:

1. To ascertain the attitude of Ohio leaders toward third world development and poverty.
2. To ascertain the attitude of Ohio leaders toward international trade.
3. To ascertain the attitude of Ohio leaders toward other cultures.
4. To ascertain the attitude of Ohio leaders toward involvement of Extension in global education.
5. To describe differences in attitude that exist among the groups sampled.

Procedures

Population

The target population consisted of three strata of Ohio citizens: (1) county agriculture leaders, (2) state level agriculture leaders and (3) metropolitan leaders. A sample of 385 (Krejcie & Morgan, 1970) was identified using a proportionate stratified random sampling technique to allow a 5% margin of error in estimating the mean attitude score for each dimension. Names were secured from College of Agriculture faculty at The Ohio State University in May of 1991, assuring an up-to-date listing.

An accessible population of 1427 names was received and duplicates removed. The frame included: 361 county agriculture leaders (25%); 687 metropolitan leaders (48%); and 388 (27%) Ohio agriculture leaders. The sample of 385 consisted of 96 (25%) county agricultural leaders; 185 (48%) metropolitan leaders and 104 (27%) Ohio agriculture leaders.

Instrumentation

A mail questionnaire, titled "Global Issues for Ohio's Citizens" was developed. A five point, Likert-type scale was used to measure attitudes on four dimensions: (1) third world development and poverty, (2) international trade, (3) sensitivity to other cultures, (4) Extension involvement in global education. Respondents were asked to identify whether they: (1) strongly disagree, (2) disagree, (3) agree, (4) strongly agree or (5) don't know how they feel about a series of statements on the topic. Only the numbers 1-4 were used in calculating the scale values. Negative items were reverse coded so the dimension could be summed.

An open-ended question requested additional comments on Extension incorporating global concepts into educational programs. Respondent personological information including: age, gender, level of schooling completed, birth in the United States, ethnicity, language proficiency (other than English) and time spent outside of the United States was collected.

Content validity was established by a panel of experts from the College of Agriculture at The Ohio State University. The questionnaire was pilot and field tested, to help control measurement error, using leaders who had not been selected as a part of the sample. Reliability for the instrument was .87 as measured by Cronbach's alpha. This met criteria (Nunnally, 1967) established for reliability (internal consistency).

Data Collection and Analysis

The questionnaire and a personalized cover letter were mailed to identified leaders in June, 1991. Questionnaires were coded to identify early and late respondents among county agricultural leaders, Ohio agricultural leaders, and metropolitan leaders and to assess non-response error. An introductory post card and three follow-up mailings to encourage returns from non-respondents were used.

Non-response error was assessed using late respondents (n=42) as a surrogate for non-respondents (Miller and Smith, 1983). Using a t-test at the .05 alpha level, no significant differences were found between early (n=264) and late respondents' domains of interest. Therefore, results can be generalized from the sample to the accessible population.
Results

Three hundred sixteen (82%) of the questionnaires were returned; 306 were usable. Responses were coded for computer analysis using SPSS. A .05 level of significance was established a priori. Descriptive statistics were used. Of the total respondents, 91 (30%) were county agriculture leaders, 133 (44%) were metropolitan leaders and 80 (26%) were Ohio agricultural leaders. Returns closely approximated the proportions in the population.

Background Demographics

Occupations varied with the largest single group being agribusiness (25%). Seventeen percent of the respondents identified themselves as farmers, 17% as educators, 18% as agency professionals and 10% as business persons. Forty percent of the respondents were between 40 and 50 years of age, 23% were under 40 and 36% were 50 or older. Results indicate that 71% of the respondents were men and 27% women. Most (96%) were born in the United States, but 78% of the respondents had visited another country and 61% of these had made their visit within the past 10 years. Forty-five (14.7%) were proficient in a language other than English. The groups surveyed were well educated and traveled with 98.7% completing high school and 91.4% attending college or going on to earn an advanced degree. Twenty five percent had obtained post graduate degrees. Seventy-two percent read a daily newspaper, 40% watched world or national news on television daily.

Findings

As reported in Table 1, respondents showed the most positive attitudes toward cultural sensitivity as measured by the questionnaire. Slightly less positive attitudes were shown toward third world development, Extension involvement in global education and international trade. Strongest agreement was noted with statements which: acknowledged respondent's ability to learn from other cultures and countries; valued citizen exchanges between countries; indicated Extension had a role to play in educating farmers and agribusiness owners about global markets; global issues and third world development; and saw Extension staff needing additional training, particularly related to global markets.

Strongest disagreement was with statements that: American farmers did not need education on global issues; global interdependence is a myth; a major obstacle to economic development in poor countries is people who do not work hard; U.S. responsibility extends only to its own farmers; and foreigners in the U.S. were taking jobs from U.S. citizens. See Tables 2, 3, 4, and 5.

Of those responding to the open ended question (n = 114), "Comments on Extension staff incorporating global concepts into their educational programs", 56% were supportive, 20% were negative and 24% offered mixed reactions. Metropolitan leaders were more positive in their comments than agricultural leaders toward Extension internationalizing.

ANOVA

ANOVA was used to determine differences among the three target groups on each dimension. Statistically significant differences (p<.05) were found between groups on each dimension. A Scheffé post hoc test was used to identify where significant differences occurred between groups. In all instances, the attitude of county agricultural leaders was less positive than metropolitan leaders or agricultural opinion leaders. Table 6 reports the results.

Attitude Toward Third World Development and Poverty

The mean score of all groups was 2.88 (SD=.39) which would be between disagree and agree, but closer to agree. County agricultural leaders varied significantly (p<.05) from metropolitan
leaders and agricultural opinion leaders relative to their attitudes toward third world development and poverty. The attitude of agricultural leaders was less positive than metropolitan leaders or agricultural opinion leaders. Metropolitan leaders showed the most positive attitude of all groups with a mean score of 2.95 (SD = .36) which would be between disagree and agree, but almost at the agree score.

**Attitude Toward International Trade**

The mean score for all groups was 2.77 (SD = .44) which would be between disagree and agree, but closer to agree. County agricultural leaders exhibited a significant (p < .05) difference from metropolitan leaders and state agricultural opinion leaders. In both instances, county agricultural leaders showed a more negative attitude.

Metropolitan leaders' attitude was the most positive of the three (X = 2.86, SD = .48), but did not vary greatly from agricultural opinion leaders' (X = 2.84, SD = .5). Both scores were between disagree and agree, but closer to the agree.

**Attitude Toward Other Cultures**

The mean score for all groups on this dimension was 3.07 (SD = .37) which would be between agree and strongly agree, but closer to agree. There was no significant difference between metropolitan leaders and agricultural opinion leaders on this dimension. A significant (p < .05) difference was noted between county agricultural leaders and metropolitan leaders. County agricultural leaders were less positive in their attitudes.

**Attitude Toward Extension Involvement in Global Education**

The mean score of 2.90 (SD = .40) would be between agree and strongly agree, but almost at agree. Metropolitan leaders were significantly (p < .05) more positive in attitude (X = 3.03, SD = .32) toward Extension's involvement in global education than county agricultural or state agricultural leaders.

**Conclusions**

Overall, the groups targeted for study were positive in their attitude toward global issues, but not strongly so, metropolitan leaders exhibited the most positive attitude toward all four international dimensions studied. County agricultural leaders were significantly (p < .05) more negative than metropolitan leaders in attitude toward: third world development and poverty, international trade, sensitivity to other cultures, and Extension involvement in global education.

County agricultural leaders were the most negative of the three groups targeted for study in attitude toward all four international dimensions studied. County agriculture leaders were significantly (p < .05) more negative than state level agricultural leaders on attitude toward third world development; poverty and international trade. Both county and state
### Table 1
Attitude of Ohio Leaders Toward Global Issues

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) THIRD WORLD DEVELOPMENT/POVERTY</td>
<td>2.88</td>
<td>.39</td>
</tr>
<tr>
<td>2) INTERNATIONAL TRADE</td>
<td>2.77</td>
<td>.44</td>
</tr>
<tr>
<td>3) SENSITIVITY TO OTHER CULTURES</td>
<td>3.07</td>
<td>.37</td>
</tr>
<tr>
<td>4) EXTENSION INVOLVEMENT IN GLOBAL EDUCATION</td>
<td>2.90</td>
<td>.40</td>
</tr>
<tr>
<td>OVERALL (1, 2, 3 &amp; 4)</td>
<td>2.91</td>
<td>.31</td>
</tr>
</tbody>
</table>

Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree

### Table 2
Attitudes of Ohio Citizens Toward Third World Development and Problems

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the poorest countries of the world, agricultural growth will be necessary to provide the poor with more purchasing power.</td>
<td>2.0</td>
<td>7.8</td>
<td>53.9</td>
<td>30.7</td>
<td>5.6</td>
<td>X</td>
</tr>
<tr>
<td>One of the major obstacles to economic development in poor countries is that there are too many people who do not work hard enough. (R)</td>
<td>29.1</td>
<td>44.1</td>
<td>12.7</td>
<td>3.6</td>
<td>10.5</td>
<td>X</td>
</tr>
<tr>
<td>Third world countries will be important customers for U.S. agricultural products in the 1990's.</td>
<td>2.9</td>
<td>12.4</td>
<td>51.6</td>
<td>25.8</td>
<td>7.2</td>
<td>X</td>
</tr>
<tr>
<td>Increased agricultural production in third world nations has coincided with an increase in their demand for agricultural imports.</td>
<td>2.3</td>
<td>15.7</td>
<td>43.1</td>
<td>8.2</td>
<td>30.7</td>
<td>X</td>
</tr>
<tr>
<td>U. S. agricultural assistance to third world countries creates new competition and undercuts American farmers in the international market. (R)</td>
<td>9.8</td>
<td>56.2</td>
<td>18.3</td>
<td>7.9</td>
<td>7.8</td>
<td>X</td>
</tr>
<tr>
<td>Trying to help starving people in the world is counterproductive because so much of the food we give never reaches the people in need.</td>
<td>13.4</td>
<td>42.8</td>
<td>26.5</td>
<td>8.8</td>
<td>8.5</td>
<td>X</td>
</tr>
<tr>
<td>The solution to the world hunger problem to severely limit population growth in third world countries. (R)</td>
<td>10.8</td>
<td>38.6</td>
<td>26.5</td>
<td>12.4</td>
<td>11.7</td>
<td>X</td>
</tr>
</tbody>
</table>

Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree; NR = No response
R = Reverse coded for data analysis
### Table 3
Attitudes of Ohio Citizens Toward International Trade

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>NR</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small and medium sized American businesses can become effective</td>
<td>1.0</td>
<td>12.4</td>
<td>54.2</td>
<td>25.5</td>
<td>6.9</td>
<td></td>
<td>3.12</td>
</tr>
<tr>
<td>participants in global markets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.64</td>
</tr>
<tr>
<td>U.S. responsibility extends only to its own farmers. (R)</td>
<td>20.9</td>
<td>60.8</td>
<td>12.4</td>
<td>5.9</td>
<td>0</td>
<td></td>
<td>2.97</td>
</tr>
<tr>
<td>We must stop giving away America's technology to other countries. (R)</td>
<td>15.4</td>
<td>52.0</td>
<td>20.5</td>
<td>7.2</td>
<td>4.9</td>
<td></td>
<td>.76</td>
</tr>
<tr>
<td>In the future, the U.S. government should not assist countries in</td>
<td>7.2</td>
<td>48.4</td>
<td>24.5</td>
<td>7.5</td>
<td>12.4</td>
<td></td>
<td>.63</td>
</tr>
<tr>
<td>producing agricultural commodities if those same countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.71</td>
</tr>
<tr>
<td>are producing commodities which compete with the U.S. on world</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agricultural markets. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the U.S. helps other countries grow more agricultural products,</td>
<td>6.9</td>
<td>45.4</td>
<td>30.7</td>
<td>4.6</td>
<td>12.4</td>
<td></td>
<td>.66</td>
</tr>
<tr>
<td>those countries will import fewer agricultural products from the U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.51</td>
</tr>
<tr>
<td>(R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One of the main U.S. agricultural problems is that we have too many</td>
<td>9.1</td>
<td>35.0</td>
<td>27.5</td>
<td>11.1</td>
<td>17.3</td>
<td></td>
<td>2.51</td>
</tr>
<tr>
<td>cheap subsidized foreign agricultural products flooding the U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>market. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Scale: 1= Strongly Disagree; 2= Disagree; 3= Agree; 4= Strongly Agree; NR = No response
R = Reverse coded for data analysis

### Table 4
Attitudes of Ohio Citizens Toward Other Cultures

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>NR</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizens exchanges between countries improve the ability of</td>
<td>.3</td>
<td>1.3</td>
<td>61.8</td>
<td>34.3</td>
<td>2.3</td>
<td></td>
<td>3.33</td>
</tr>
<tr>
<td>participants to understand and care about how other people live.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.51</td>
</tr>
<tr>
<td>American farmers do not need education from Extension on global</td>
<td>34.6</td>
<td>52.9</td>
<td>4.3</td>
<td>3.3</td>
<td>4.9</td>
<td></td>
<td>3.25</td>
</tr>
<tr>
<td>issues. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.68</td>
</tr>
<tr>
<td>We can learn from the culture and technology of other countries.</td>
<td>0</td>
<td>1.6</td>
<td>70.3</td>
<td>26.5</td>
<td>1.6</td>
<td></td>
<td>3.25</td>
</tr>
<tr>
<td>Global interdependence is a myth.</td>
<td>27.7</td>
<td>48.4</td>
<td>11.8</td>
<td>2.0</td>
<td>10.1</td>
<td></td>
<td>3.13</td>
</tr>
<tr>
<td>The large numbers of foreigners in the U.S. are a primary reason</td>
<td>24.8</td>
<td>59.5</td>
<td>9.5</td>
<td>6.2</td>
<td>0</td>
<td></td>
<td>3.03</td>
</tr>
<tr>
<td>for the high jobless rate among American citizens.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.77</td>
</tr>
<tr>
<td>Our customs, beliefs and values should be used as models by other</td>
<td>17.7</td>
<td>52.6</td>
<td>13.7</td>
<td>4.2</td>
<td>11.8</td>
<td></td>
<td>2.94</td>
</tr>
<tr>
<td>countries. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.69</td>
</tr>
<tr>
<td>Citizens of the United States are ignorant about world affairs.</td>
<td>3.9</td>
<td>27.1</td>
<td>44.4</td>
<td>19.0</td>
<td>5.6</td>
<td></td>
<td>2.83</td>
</tr>
<tr>
<td>Getting to know people of another culture is a good idea, but little</td>
<td>15.0</td>
<td>47.1</td>
<td>27.1</td>
<td>3.9</td>
<td>6.9</td>
<td></td>
<td>2.78</td>
</tr>
<tr>
<td>ever comes of it. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.73</td>
</tr>
</tbody>
</table>

*Scale: 1= Strongly Disagree; 2= Disagree; 3= Agree; 4= Strongly Agree; NR = No response
R = Reverse coded for data analysis
Table 5
Attitudes of Ohio Citizens Toward Extension Involvement in Global Education

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
<th>X</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension should develop programs to educate America's farmers,</td>
<td>2.3</td>
<td>5.6</td>
<td>52.6</td>
<td>35.9</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>agribusinesses and rural leaders about competing in global markets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension staff should receive training to become more knowledgeable</td>
<td>2.6</td>
<td>5.9</td>
<td>63.1</td>
<td>23.2</td>
<td>5.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>about global marketing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension staff in Ohio have a role to play in helping clientele</td>
<td>1.9</td>
<td>4.6</td>
<td>60.0</td>
<td>16.3</td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>understand global issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension can help Ohio citizens understand rationale for</td>
<td>2.9</td>
<td>7.2</td>
<td>62.7</td>
<td>20.3</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>supporting agricultural development in third world countries.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International study tours sponsored by Extension would increase</td>
<td>1.3</td>
<td>8.2</td>
<td>76.1</td>
<td>14.4</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>clientele awareness of global issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involvement of Extension staff in third world development projects</td>
<td>14.4</td>
<td>58.2</td>
<td>13.7</td>
<td>9.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>can improve their ability to help local clientele.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension staff should not be involved in helping third world</td>
<td>19.6</td>
<td>50.0</td>
<td>17.3</td>
<td>7.5</td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>farmers improve production practices. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension county agents do not have the expertise to help</td>
<td>25.2</td>
<td>33.0</td>
<td>7.8</td>
<td>29.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clientele understand global interdependence. (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension staff should focus on local problems. (R)</td>
<td>5.5</td>
<td>34.0</td>
<td>41.5</td>
<td>10.5</td>
<td>8.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scale: 1= Strongly Disagree; 2= Disagree; 3= Agree; 4= Strongly Agree; NR = No response
R = Reverse coded for data analysis

Table 6
ANOVA: Attitudes Toward Global Dimensions

<table>
<thead>
<tr>
<th>Groups</th>
<th>Third World Development/ Poverty</th>
<th>International Trade</th>
<th>Sensitivity to Other Cultures</th>
<th>Extension Involvement in Global Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Agriculture Leaders (n=91)</td>
<td>X=2.73 SD=.38</td>
<td>X=2.59 SD=.45</td>
<td>X=2.97 SD=.35</td>
<td>X=2.77 SD=.42</td>
</tr>
<tr>
<td>Metropolitan Leaders (n=133)</td>
<td>X=2.95 SD=.36</td>
<td>X=2.86 SD=.38</td>
<td>X=3.14 SD=.37</td>
<td>X=3.03 SD=.32</td>
</tr>
<tr>
<td>State Agriculture Leaders (n=80)</td>
<td>X=2.92 SD=.39</td>
<td>X=2.84 SD=.48</td>
<td>X=3.06 SD=.35</td>
<td>X=2.83 SD=.44</td>
</tr>
</tbody>
</table>

Source: df F df F df F df F df F

Main Effects: 2 10.07* 2 10.07* 2 6.40* 2 13.71* 2

p<.05  a,b - means with common superscript differ significantly.
agriculture leaders were less positive about Extension involvement in global education. The groups surveyed were well educated and traveled with 98.7% completing high school and 91.4% attending college or going on to earn an advanced degree. Twenty-five percent (25%) had obtained post graduate degrees. Seventy-seven percent (78%) had traveled outside the United States and 71% read a daily newspaper.

County agricultural leaders, Ohio agricultural leaders and metropolitan leaders studied expressed the attitude that America’s farmers, agribusinesses and rural leaders need education about competing in global markets. Respondents indicated we can learn from the culture and technologies of other countries and felt citizen exchanges between countries improved the ability of participants to understand and care about how other people live. Attitudes expressed indicate Extension has a role to play in helping clientele understand global issues, global marketing and the role of agriculture development in third world countries.

**Educational Significance**

Each day evidence is found reinforcing the importance of understanding ourselves and others. Individual choices impact the global village we inhabit. This applies to decisions at all levels: economic, political and social. Interdependence is no longer a matter of belief, preference or choice. It is an inescapable reality (Harris & Moran, 1987).

Contemporary people learn about their world primarily through information systems. Information travels rapidly by way of television, radio and other communications devices. The media, coupled with experience, socialization, and nonformal and formal educational systems all contribute to an individual’s global perspective -- a blend of many things that shapes how an individual views and interacts with his or her world. As a non-formal education system, Extension must view itself as part of an information system that can impact people’s view of the world. Extension needs to collaborate with other public and private organizations to address global issues and facilitate lifelong learning.

Extension can educate staff and clientele regarding global issues and the many interrelationships which exist. A priority should be placed on integrating international perspectives into current domestic programming and materials. However, making education everyone’s responsibility often means that no one feels empowered to act. The Ohio Extension International Committee in cooperation with Extension administration and College of Agriculture administration will need to take programming initiative.

The study indicated global marketing and international trade should be targeted for emphasis and reinforced ES-USDA recommendations in *Going Global* (1989). With GATT and North American Free Trade Agreements soon to be implemented, a teachable moment exists. Extension staff, if adequately prepared, can help the public understand how the global marketplace functions and how the economic health of the U.S. agriculture community is connected with international development. Through staff development activities and tours, Extension staff can become more familiar with new technology developed abroad and how this can be adapted to benefit American agriculture or the consumer.

Traditional county agricultural constituency in Ohio may require curriculum designed to broaden their understanding of third world development. An increasing awareness of environmental concerns, water supply and human nutrition concerns are examples of areas where relevant global education curriculum can be developed.

The demographics of the U.S. are changing and clientele is increasingly diverse. Understanding and sensitivity to the unique needs of other cultures will be essential in designing and carrying out effective programs in the future. Extension needs to become proactive in incorporating opportunities for citizens of
different cultures to meet and exchange ideas. This may mean travel or better utilization of visiting students, scholars and foreign nationals living within local communities.

Finally, the results while not generalizable beyond Ohio, can provide Extension leaders in other states insights into possible clientele reactions and may stimulate further study. Further study regarding the current attitude, level of global awareness and competency of Extension staff to incorporate global concepts into educational programs, curriculum and materials is needed.

**References**

Hubbard, D. D. (Coordinator), et al. (1990). *Competitiveness in American agriculture international marketing*.


LEADERSHIP FOR NONFORMAL EDUCATION

Arlen Etling, Associate Professor
Department of Agricultural and Extension Education
The Pennsylvania State University

Abstract

Effective leadership for nonformal education is not the same as for formal education. Particularly when working in international settings, the educator must be aware of the similarities and differences between formal and nonformal education. In addition, the educator must be able to employ diverse leadership styles. Too much reliance on an authoritarian leadership style, which works in the classroom, may cause problems outside the classroom. Finally, a knowledge of consultant styles is important. Consultant behavior based on a "prescriptive" style or an approach which emphasizes "theories and principles" may not be appropriate for nonformal educational settings. The author advocates a "catalytic" style of consulting for nonformal education and describes how it can be applied for effective leadership in nonformal education.

How can educators provide leadership to insure the success of nonformal educational programs in international settings? Competent educators, whether "nationals" involved in their own extension organizations or "ex-patriot consultants" involved in an array of out-of-school educational programs, are concerned with the design and delivery of quality programs. They cannot be effective, however, if they do not have a broad understanding of leadership diversity, nonformal education, and various consultant styles.

Most educators are aware of differences when they move from the classroom to nonformal educational settings typical of Scouts, 4-H, youth sports, church groups, or young farmers organizations (outside schools). Many educators see these groups as "inferior educational settings" where there is lack of discipline and professionalism. Such educators often behave the same in such groups as they do in the classroom.

Educators who base their approach only on the school model, however, often fail when dealing with nonformal educational programs. Schools tend to emphasize compulsory attendance, techniques to discipline students, prescribed curricula, and dependence on teachers to control the learning that occurs. Consequently, hierarchical relationships among students, teachers, and administrators are the norm. Classrooms usually contain age-specific groupings of youth whose learning is put to use after they graduate rather than immediately. Educators who come from formal settings often agree with Kindervatter when they confront nonformal educational settings. They quickly develop "... a dissatisfaction with traditional approaches to learning and search for a new pedagogy" (Kindervatter, 1977).

In nonformal educational settings, client groups seldom resemble the typical school classroom. Attendance is usually voluntary. Learners come with their own objectives and leave when those objectives are met or when they conclude that their objectives will not be addressed. Diverse age groups are common in nonformal educational programs where effective educators are less rigid than classroom teachers in regard to the teaching role. Such educators constantly learn from their clients and often use their clients, intentionally, as educators because of their skills, knowledge, experience or expertise. In order to positively affect nonformal educational programs educators need to be aware of the historical forces such as authoritarian leadership that may work against them. They need to understand how formal and nonformal education differ. They need an
expanded awareness and skills in leadership and consultation. This article will address each of these issues.

**A History of Authoritarian Leadership**

In this century most of the world's population has been deeply affected by colonialism, World War II, the Cold War, independence movements which have often been turbulent, and a period of regional wars and tensions. With few exceptions, world leaders during this time have used an authoritarian leadership style. Military leaders, political "strongmen," and the more recent fundamentalist religious leaders have outnumbered leaders such as Gandhi or Martin Luther King, Jr. Even in newly independent nations the leaders have usually imitated the leadership style of colonial administrators rather than less authoritarian styles. Most decisions affecting people have been made "at the top" rather than at a "grassroots" level. In times of turbulence and scarce resources, this "top down" mode of decision making is understandable.

Even in extension work, technology transfer and innovation have been consciously directed in most countries as part of a national plan toward the "better-off" farmers who are the innovators and early adopters. This approach, however, is being questioned. The Food and Agricultural Organization (FAO) of the United Nations held a global consultation in Rome in December, 1989, on the need to improve extension services. "The consultation found that the trickle-down theory of extension--that extension messages flow from the better-off to the poor--had limited validity " (FAO, 1990). The consultation concluded, "In many countries, the extension service will have to make greater efforts to adopt the participatory extension approach and mobilize farmers' and other community organizations" (FAO, 1990). To replace "top down" programming with a more participatory approach, extension educators need to understand how nonformal education differs from the formal (school) system. Then they need to modify their leadership and consultation styles accordingly.

**What is Nonformal Education?**

Nonformal education is difficult to define satisfactorily, and some educators even feel that definitions confine more than clarify. Since nonformal educational activities are numerous and diverse, a single definition which applies to all is difficult to develop. Coombs (1973) says it is:

...any organized educational activity outside the established formal system--whether operating separately or as an important feature of some broader activity--that is intended to serve some identifiable learning clienteles and learning objectives.

Even this definition can be confused with formal schooling. Because education is too often perceived in terms of schooling, we must be careful to state our assumptions so that such misconceptions are avoided. We must further clarify and extend Coombs' definition.

Key dimensions can be identified for particular nonformal educational settings. These dimensions are contextual. They may vary from one international setting to another. A review of literature on the theory and practice of nonformal education found that six dimensions tend to dominate (Etling, 1975; Khan, 1989).

1. **Learner-centered** means that emphasis is on learning rather than teaching. The learner participates in determining educational objectives and exerts substantial control over content and method. Attitudes of self-awareness and power to control the environment are fostered. Local initiative, self-help, and innovation are encouraged in order to prepare learners to analyze critically and take action to resolve their own practical problems.

2. **Cafeteria curriculum** (options, variety, and flexibility) is featured instead of the sequential, prescribed curriculum associated with schools. The curriculum...
is generated primarily by learners. A strong entertainment feature is included. Examples include local radio, village newspapers, market day exhibits, posters, mobile libraries, drama, role play, games, puppets, and epic narrative. Resources and skills need not be imported or professionally designed.

3. **Informal human relationships** are essential. Learners and educators are roles which, ideally, switch back and forth among participants. Informal relationships based on mutual respect are necessary if education is to be learner-centered and learners are to choose from a cafeteria of learning opportunities. While this value position is often difficult for professional teachers to accept, local nonprofessional "facilitators" who see their role as catalyst, helper, or enabler are often more effective than lecturers or classical academicians.

4. **Reliance on local resources** means that costs are kept low without sacrificing quality. Both conventional and unconventional sources are used, and available resources are deployed efficiently. Expensive technology is not necessary and often undesirable. Because learners often bear part of the cost, higher motivation and greater program accountability often result.

5. **Immediate usefulness** is necessary to learners, who are seldom required to participate in nonformal educational programs. If they cannot see immediate and personal value in the program they are likely to leave. Formal schooling often is oriented to future application. Nonformal education usually involves short term activities with immediate impact.

6. **A lower level of structure** is necessary when local situations vary so much between and within themselves. Since a high level of structure means a high level of control, learner-centered approaches, informal human relationships, and immediate usefulness are difficult to achieve under tightly controlled situations. Flexibility too frequently is sacrificed for control. Yet flexibility is necessary to meet the needs of individuals, subcultures, and minority groups. Voluntary organizations and amateurs who learn on the job are favored over governmental programs featuring bureaucratic approaches managed by civil servants. Decentralization is necessary to allow for local approaches to be used to solve local problems.

If these six dimensions are carefully considered by educators when working in nonformal educational settings, planning and implementation will be more effective. These dimensions affect nonformal educational programs at many points. In cooperative extension in the United States, for instance, these dimensions need to be considered in the structure of the organization, in its mission statement, choice of priorities, in-service training of professionals, and in its use of educational methods and techniques. To be truly effective in the future, extension workers will need to shape their organizations, at both the national and community levels, to be flexible in responding to the needs of clients rather than requiring clients to adapt to a rigid, unresponsive organization. Effective agents have always done this in the past.

Extension workers will need to give special attention to the way extension programs are planned. The steps in program planning, however, do not change with formal and nonformal education. But the involvement of people and the techniques used to plan programs collaboratively differ strikingly. With an authoritarian leadership style and a paternalistic attitude toward clients, nonformal educators are bound to fail. Before working on nonformal educational programs, these educators need to diversify their leadership style.
Diversifying Leadership Style

We all agree that a leader is someone who influences others. Most individuals have an image of the ideal leader who may be described by such words as persuasive, courageous, powerful, skillful, and intelligent. In addition, many people have ideas about leaders which can be called myths. Examples of myths include the following misconceptions:

1. leadership is no more than getting others to do what you want of them;
2. leadership is a person--some have it and some do not;
3. some people are born leaders.
4. leaders defeat enemies; and
5. leadership always involves action.

These are myths because:

1. manipulative leaders eventually arouse opposition;
2. anyone can be a leader at any time if that person helps a group meet its goals;
3. leadership is learned;
4. leaders help others accomplish group goals which need not involve an enemy; and
5. sometimes leadership involves not taking action.

A definition of leadership which avoids these myths is: **the art and science of helping others to decide on goals and work toward accomplishing those goals.** Of course, leadership is much more. Most writing on leadership focuses on three styles of leaders (Figure 1):

<table>
<thead>
<tr>
<th>Authoritarian</th>
<th>Democratic</th>
<th>Laissez Faire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directive</td>
<td>Democratic</td>
<td>Non-Directive</td>
</tr>
<tr>
<td>or Task Oriented</td>
<td>Process Oriented</td>
<td>No Orientation</td>
</tr>
<tr>
<td>or Task Behavior</td>
<td>Relationship Behavior</td>
<td>Do Nothing</td>
</tr>
</tbody>
</table>

**Figure 1.** Three Styles of Leadership.
According to Etling, Radhakrishna, and Bowen (1993), when a leader is **directive**, that person initiates action, structures activities, motivates others, delegates responsibility, and praises or reprimands subordinates. A **democratic** leader gets results by leading discussions, asking questions to involve others, encouraging others to volunteer for responsibilities, confirming commitments, and asking for a vote to get a consensus or a majority decision. A **non-directive** leader refuses to make decisions for others, uses silence until someone in the group speaks out, gives non-verbal support (nods, smiles) to others who show positive leadership, and gradually fades out of a group when others in the group show an ability and willingness to take over.

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

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

### Facilitator Leadership

Learning more about facilitator leadership is important. Most people value democratic leadership. Historically, however, they have usually followed directive leaders. Non-directive leadership often has been viewed as weak. Military and business activities usually call for directive leadership. Most national leaders come from those backgrounds. But in community volunteer organizations, directive leadership can be overused with disastrous results.

A comparison of the traditional directive leader and the facilitator leader (Etling, Radhakrishna, & Bowen, 1993) is in order (Figure 2).

Nonformal educators, who would develop a facilitator style of leadership need to strengthen their skills and sensitivity in all three areas. To more effectively employ directive leadership, they need to consider if it is the best style for the situation. Does the group need directive leadership? Who is the best person to direct? Who in the group will compete for the leadership role? How can conflict be avoided and cooperation fostered? The directive leader must also avoid taking all of the jobs or seeking all of the glory. A directive leader needs to recognize individuals' contributions, praise them in front of the group, keep criticism constructive and private, delegate responsibility, think before speaking, speak briefly and to the point, seek advice before making decisions for a group, and admit mistakes when they are made.

When practicing democratic leadership, the educator, whether extension agent or outside consultant, should make each group member feel important by asking for opinions, especially from the quieter members, by using a variety of techniques for decision-making (majority voting, negative voting, consensus, compromise, etc.), and by asking questions to get others involved. The democratic leader...
**Table:**

<table>
<thead>
<tr>
<th><strong>directive leader</strong></th>
<th><strong>facilitator leader</strong></th>
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<tbody>
<tr>
<td>leads from in front</td>
<td>often leads from behind</td>
</tr>
<tr>
<td>one style</td>
<td>three styles</td>
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<tr>
<td>gives orders, make statements</td>
<td>relies more on questions and suggestions</td>
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<tr>
<td>focuses on leader's strengths</td>
<td>focuses on group's needs</td>
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<tr>
<td>person of action</td>
<td>sensitive, thoughtful person</td>
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<tr>
<td>know-it-all</td>
<td>seeks help from others</td>
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<tr>
<td>says, &quot;Don't just sit there, do something.&quot;</td>
<td>says, &quot;Don't just do something, think about it first.&quot;</td>
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**Figure 2.** A Comparison of Traditional Directive Leader with the Facilitator Leader.

... should encourage group decisions and discourage individual decisions which do not support the group. Once a decision is made, the democratic leader should summarize agreements and commitments then "check back" to see if group members need help to complete their commitments.

To be an effective non-directive leader, an educator must learn to listen, observe, consider what is happening and why, and encourage others through non-verbal behaviors (smile, nod in agreement, give a "thumbs up" signal). When group members ask for the leader's opinion, the question should be turned back to them or to a quieter member by saying, "I'm not sure. What do you think, Jill?" When asked to decide, a non-directive leader should turn the decision back to them by saying, "I really don't feel I should decide for the group. What are the possible decisions? What are the pros and cons of each? Which possibility would you choose?"

In summary, a facilitator leader assesses the situation and chooses a leadership style appropriate for the situation (Figure 3):

As skills increase, a facilitator will be able to shift from a directive to a democratic to a non-directive style as appropriate. When the group is able to make decisions and take responsibility for its concerns, the facilitator will be prepared to relinquish leadership in order to give attention to other needs or opportunities.

**Consultant Styles**

When working with local groups in nonformal educational settings in other countries, the educator needs one more tool in order to be effective: an understanding of different consultant styles. Blake and Mouton (1976) describe five consultant styles which they call "kinds of intervention: prescriptive, theories and principles, confrontation, acceptant, and catalytic."

In prescriptive consulting the client is told what to do or the consultant does it for the client. The consultant assumes the responsibility and makes decisions. Obviously this style conflicts with the six dimensions of...
nonformal education and would be inappropriate for many nonformal educational settings. It is more consistent with directive leadership. A facilitator leader would not be able to rely extensively on this consultant style.

**Theories and principles** is a kind of intervention where the consultant helps the client internalize theories in order to diagnose and deal with situations using "sound behavior." Theory is defined strictly as explicit hypotheses—systematic behavioral science formulations—that can be tested. Since nonformal education involves trial and error, common sense, and flexible plans (all of which are specifically rejected in Blake and Mouton's definition of theory), this kind of intervention is also largely inappropriate for a nonformal educational setting.

**Confrontation** is a means of challenging assumptions of clients. Although this type of intervention may be helpful and necessary at times, it may damage informal human relationships if overused. Care should be exercised in the use of this consulting style. It tends to be teacher-centered rather than learner-centered and it fits more with directive leadership than with facilitator leadership.

Where the client needs a sense of personal security or encouragement toward self-reliance, the **acceptant** style may be used. This style is often appropriate in nonformal education (i.e., when encouraging local communities to exercise self-determination). This style may be appropriate in the same situations that call for non-directive leadership. By itself, however, this style is one-dimensional. A facilitator leader might use it occasionally but not always. The acceptant style, if overused, can disappoint clients who may feel that they do not need a consultant who only tells them that they are on the right track.

The fifth kind of intervention, the **catalytic** role, is usually most appropriate where participation is desired. In consulting, as in chemistry, the catalyst is an agent which, when added to other substances, causes a change in the speed of reaction but does not get used up in the process. Catalytic intervention is consistent with the six nonformal education dimensions. It is also similar to the "facilitator" role and involves skills needed by effective nonformal educators.
At times, the catalytic consultant will use directive leadership; at other times democratic leadership will be appropriate; and occasionally, non-directive leadership may be best to catalyze a client group. The key in catalytic consulting, as in facilitator leadership and nonformal education, is to focus on the learner, maintain flexibility, provide options, maintain informal human relationships, emphasize practicality, and avoid rigidity in structures or processes.

Summary

This article has focused on effective leadership for nonformal education. The underlying theme is sensitivity and diversity on the part of the international educator. For too long, we have seen "airport consultants" working on nonformal education programs. Such consultants accept assignments for which they are unprepared. They often decide on solutions while enroute to the assignment. Their solutions, however, are usually based on their experiences in formal education. Unfortunately their attitude, on too many occasions, is "Here is my advice, now tell me about your problem." Finally, such consultants usually return home before "their" solutions are implemented. A similar attitude often prevails among the "experts from the capital city" when they visit local educational programs.

Needless to say, competent nonformal educators who practice the preferred behaviors described in this article are rare. Further, to find educators who can move from formal educational settings to nonformal educational settings is even more difficult. If local people are to benefit from their education, they must be heavily involved—not just as passive receivers of "so called" expert advice, but also in the planning and control of their educational programs. The need for active participation by learners is clear. FAO (1990) reviewed several past efforts of top-down administration and trickle down delivery of extension programs and concluded that a new strategy is needed to revitalize rural development:

A basic element of the strategy is already clear: people's participation. Future development efforts must aim at releasing the energies of rural people and guaranteeing that they share fully in the fruits of their efforts. This can only be achieved by enabling the poor to take charge of their lives, to make full use of resources and to manage their own activities.

This article has discussed several desirable skills and knowledge needed by educators who wish to be effective in nonformal educational settings. It has also described many of the attitudes necessary to work effectively in nonformal educational programs. Of these three—skills, knowledge, and attitudes—the most important is attitude. Educational programs will serve the needs of learners more effectively when educators recognize the basic similarities and differences between formal and nonformal education and then expand their leadership and consulting styles to fit the needs of the programs with which they are working.

References


A FRAMEWORK FOR INCORPORATING INDIGENOUS KNOWLEDGE SYSTEMS INTO AGRICULTURAL EXTENSION ORGANIZATIONS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT IN INDIA

B. Rajasekaran, Information Scientist
Consortium for International Earth Science Information Network (CIESIN)
Saginaw, Michigan

Robert A. Martin, Professor
Department of Agricultural Education and Studies
Iowa State University

D. Michael Warren, Professor and Director
Center for Indigenous Knowledge for Agricultural and Rural Development (CIKARD)
Iowa State University

Outstanding Graduate Student Research Presentation

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Introduction

Indigenous knowledge (IK) is the systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments, and intimate understanding of the environment in a given culture. Local people, including farmers, landless laborers, women, rural artisans, and cattle rearers, are the custodians of indigenous knowledge systems (IKSs). These indigenous knowledge systems may appear simple to outsiders but they represent mechanisms to ensure minimal livelihoods for the rural resource-poor people in India. During the process of technology development, farmers' informal experimentation has not been considered as a source of innovation (Rajasekaran & Martin, 1990). During the process of technology dissemination, feedback information from farmers after the introduction of technologies is rarely recorded. Farmers' needs, priorities, and innovations are not considered while developing and disseminating technologies.

Indigenous knowledge is dynamic, changing through indigenous mechanisms of creativity and innovativeness as well as through contact with other local and international knowledge systems (Warren, 1990). Understanding farmers' knowledge allows a framework of reference for posing technical, scientific questions in research. It also provides the basis for evolving technological options that are not imposed as alien 'packages' which contradict its existing practices (Scoones, 1989). For instance, technological interventions with respect to agroforestry must be based on the principles of ethnobotany, agroecology, and farmers' experiments on home gardens (Rocheleau, 1987). Therefore, identifying, documenting, and incorporating indigenous knowledge systems into agricultural extension organizations is essential in order to achieve sustainable agricultural development.

Purpose

The purpose of this paper is to present a methodological framework to incorporate indigenous knowledge systems into agricultural extension organizations for sustainable agricultural development in India.
A recent study was conducted in three villages of the Union Territory of Pondicherry, India. Indigenous knowledge systems (IKSs) were recorded using farmer participatory methods such as participant observations, and unstructured interactions (Rajasekaran, 1992). The findings of the study revealed that IKSs can provide a frame of reference for strengthening agricultural extension programs. The findings of the study have led the researchers to the development of a framework for incorporating IKSs into agricultural extension organizations. This paper focuses on the development of the framework.

Framework Development

Need for the Framework

The need for researcher-farmer involvement has been given high priority in the recent farming systems research/extension literature. However, it is difficult for research station scientists to conduct research involving farmers all the time due to the insufficient human resource capacity of regional research stations (Rajasekaran & Martin, 1990; Warren, 1991). For instance, there is only one research station in the Pondicherry region, India, which is expected to cater to all agricultural research needs of the entire region. There are approximately twenty scientists working in this station. This number is far too low when compared to the number of farming communities in the region. Keeping this low researcher-farm family ratio in view, the framework advocates the use of academically well-trained and "research minded" extension personnel to identify, record, and validate farmer experiments.

Subject Matter Specialists as Researchers

Recent statistics show that most of the divisional-level subject matter specialists (SMSs) are post-graduates in different disciplines such as agronomy, soil science, entomology, and plant breeding. Moreover, the department of agriculture is sponsoring extension personnel to undergo post-graduate training in the specialized disciplines mentioned above. The advanced knowledge they acquire during this training period along with their field experience as SMSs should be used for validating farmer experimentation. It was found that SMSs spend most of their time in headquarters assisting their heads of offices, and preparing periodical reports to be sent to their higher authorities (Rajasekaran & Martin, 1990). In other words, the academic training acquired by the SMSs is rarely exploited. They should spend at least one day in a week on activities such as: (1) problem identification; (2) recording relevant IKSs; and (3) presenting the problems and IKSs to the technology development consortium.

Recording Relevant Indigenous Knowledge Systems

Indigenous knowledge (IK) is the systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments, and intimate understanding of the environment in a given culture. IK is dynamic, changing through indigenous mechanisms of creativity and innovativeness as well as through contact with other local and international knowledge systems (Warren, 1990). In the process of technology development, knowledge of indigenous livelihoods is an indispensable resource (Haverkort & Zeeuw, 1992). Indigenous knowledge may not be as abstract as scientific knowledge. It is often concrete and always dynamic. It relies strongly on intuition, directly perceivable evidence, and an accumulation of historical experiences (Farrington & Martin, 1987). Indigenous knowledge reflects the dignity of the local community and puts its members on an equal footing with the outsiders involved in the process of technology development (Haverkort & Zeeuw, 1989). Indigenous knowledge systems also provide mechanisms for facilitating understanding and communications between outsiders (extensionists, researchers) and insiders (farmers). Improved understanding and communications enhance participatory approaches to problem identification (Warren, 1992).
Recording the indigenous knowledge systems (IKSs) of farmers forms the first step of developing and disseminating sustainable agricultural technologies. In other words, how do farmers try to overcome or adapt the problems using their own knowledge? For instance, informal exchange of rice seeds from farmer-to-farmer is used as a strategy by farmers to solve the growing demands of quality rice seeds in the study villages. The SMS in coordination with agricultural officers should record IKSs.

Validating Farmer Experiments

Selection of farmers is one of the crucial activities during the process of validating farmer experiments. The various steps involved during the process of validating farmer experiments are: (1) Understanding the rationale behind farmer experimentation. Examples are testing varieties for yield increase, blending local and external inputs, avoiding risks by adjusting sowing and harvesting periods, and testing new varieties for local adaptation; (2) Recording the mode of conducting experiments. For instance, some farmers conduct varietal trials by raising local and high yielding varieties in two different plots. Others establish experiments by planting the local and new varieties in alternate rows; and (3) Identifying farmers' evaluation criteria. The criteria used by farmers to evaluate their own experiments differ from farmer to farmer and also for the same farmer, from crop to crop. The physical stand of the crop and the way it bears the earheads is one of the major criteria for rice farmers in the Eastern Visayas region of Philippines (Tung, 1992). In the study villages, farmers randomly uproot one or two groundnut crops and shake the pods by holding them close to their ears. If they hear any sound, it indicates that the pods are unfilled. If they do not hear any sound, it indicates that the pods are filled.

Understanding, identifying, recording, and evaluating farmer experiments form the various stages of validating farmer experiments. It is important that extension personnel understand the farmers' own criteria when they explore indigenous approaches to farmer experimentation.

Facilitating Village-Level Experimenter Workshops

Experimenter workshops should be conducted immediately after validating farmer experiments. The village extension workers should facilitate the experimenter workshops by involving farmer experimenters as resource persons. The SMSs should act as semi-silent observers during these workshops. This process is a way of empowering and respecting village-level
extension workers and farmers. Farmer experimenters should be encouraged to share their experiences while conducting the experiments. They are expected to answer specific questions raised by other participant farmers. After the formal discussion, the SMSs should wrap up the workshop by sharing their experiences during the process of validating farmer experiments. The village extension worker should act as a facilitator by bringing farmers to the subject of discussion when conflicts arise and also monitor the time.

**Evaluating Technological Options**

Finally, farmer experimenters with inputs from other farmers should evaluate the technologies that have been tested during the farmer experimentation procedure in terms of their contribution to: (a) productivity of crops and associated livestock, (b) sustainability of the agricultural system, (c) complexity (e.g., ease of experimentation), and (d) labor intensity. They are expected to arrive at any one of the following decisions:

1. **Drop the technological option that has been tested;**
2. **Technological option needs long-term research;** and
3. **Technological option is ready for further dissemination.**

Technological options that need long-term research should be communicated to researchers through the technology development consortium. Technological options that are ready for further dissemination but require additional resources and infrastructural facilities should be discussed with appropriate departments. Technological options that are ready for further dissemination can be communicated to their colleagues through zonal workshops.

**Technology Dissemination Through the Agricultural Extension System**

Compton (1989) stated that extension personnel blanket the countryside. This enormous human resource capacity should be effectively utilized for disseminating technologies to distant locations and other villages. In spite of the continuous debate regarding the effectiveness of the Training and Visit (T&V) extension system, the T&V stands as the single major source for formal technology dissemination in many developing countries. The T&V system of extension has sought to operationalize a strong and regular link between research and extension, and between extension and farmers (World Bank, 1990). The salient features of the T&V such as (1) monthly zonal workshops; (2) biweekly training programs; (3) village extension workers contact with farmers; and (4) maintaining extension worker-farm family ratio can be effectively utilized. The potential of the T&V system of extension in increasing agricultural productivity has been clearly demonstrated (Antholt, 1992; Feder, Slade & Sundaram, 1986).

**Bringing Original Innovators to Zonal Workshops**

Monthly zonal workshops are the important points where farmer experimenters as original innovators of technologies need to be recognized. It is essential for agricultural extension personnel to listen to the farmer experimenters whose raw materials (IKSs) contributed to the development of finished products (technological options). Encouraging the farmer experimenters by offering cash prizes is one of several ways of providing recognition and compensation for their contribution to the development of technologies. Such rewards also encourage their colleagues to share their knowledge by participating in the process of developing technological options.

**Screening Technological Options**

The SMSs receive technologies from zonal workshops and relay them to their village-level extension workers without tailoring these technologies to the agro-ecological and socio-cultural conditions of their own division.
Once the technological options are disseminated to extension personnel, it is their responsibility to screen those options by considering the following factors:

1. SMSs should select those technological options that fit into agroecological environments of their division; and

2. SMSs should work with village-level extension workers in understanding the socio-cultural factors that have a negative impact on selected technological options.

Disseminating Technological Options to Village Extension Workers

After screening, the technological options should be disseminated to village extension workers. During the process of dissemination, SMSs should act as facilitators rather than simply conducting training programs for the village extension workers. The adaptability of technological options should be discussed with village extension workers. The technological options that are disseminated to village-level extension workers using these steps differ from the existing system of delivering technologies in the following ways:

1. Technologies delivered by the existing research-extension system are fixed packages and rarely provide any options to farmers. The system expects the farmers to adopt an entire package. On the other hand, the technologies that are developed using the proposed framework provides diversified technological options which enable farmers to choose using their own decision-making system;

2. Presently technologies rarely build on IKSs of farmers. In the new approach, technological options presented to farmers originate from the farmers' own knowledge; and

3. Under the conventional system, technologies come from only one source, the research stations. In the suggested system, the technological options are developed using diversified sources such as extension agents, NGOs, farmers, and research stations in active participation with "research minded" farmers.

Disseminating Technologies Using Indigenous Communication Channels

Village extension workers should be encouraged to follow certain guidelines while disseminating the technological options. The agricultural officers should be made responsible for providing institutional support for the village extension workers during the process of disseminating the technologies. Organizing training programs to explore indigenous communication channels for disseminating the selected technological options is essential (Mundy & Compton, 1991). Village extension workers should be encouraged to use delivery points other than farms such as shandis (market days), koil thiruvizha (village temple days), magalir mandram (a village-level women's society), and cooperative marketing points.

Educational Importance

Incorporating indigenous knowledge systems into agricultural and extension education programs will result in: (1) understanding the 'emic' perspectives of local people; (2) bridging the communication gap between outsiders and insiders; (3) recognizing the accomplishments of local farmers; (4) helping outsiders familiarize themselves with local conditions and abstract terms; and (5) increasing the participation of farmers and their organizations in integrating, utilizing, and disseminating what already exists.

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THE WORLD'S LARGEST EXTENSION SYSTEM

Henry M. Bartholomew, Associate Professor and Extension Agent
Agriculture and Natural Resources
The Ohio State University

Abstract

China has an ancient tradition of agricultural research and extension dating back as far as the first century A.D. Today, the Chinese Extension system is the largest in the world with nearly two-thirds of the extension employees worldwide. Providing initial and in-service education for a vast workforce spread over a large country is difficult. The Extension methods used in a centrally controlled government vary greatly from western countries. In spite of many challenges in communicating new agricultural developments to 200 million farm households, extension plays a critical role in providing food, fiber and fuel for the world's largest populated country.

China has the largest extension system in the world but it is organized and managed very differently from the extension system in the United States. China has 300,000 employees working from the national through the township level in the crops division. Another 500,000, mostly part-time farmer technicians, are employed at the village level. Add to this, the employees of the livestock division and China has more than two-thirds of the extension employees worldwide. Extension programs are focused nearly exclusively on agriculture, although extension does get involved on the local level in social issues such as family planning.

Providing food, fuel and fiber for the country with the world's largest population is a daunting task. Chinese farmers who have only 7% of the world's arable land, feed 22% of the world's population. The extension system in China is charged with spreading new agricultural technologies to 850 million rural inhabitants. Heavy rains in the mountains are responsible for frequent floods causing widespread crop damage. Droughts are also a frequent occurrence in the fertile but dry northern China plain. Eighty percent of the Chinese population of 1.1 billion people live in the countryside, farming soils which have been tilled for over 4000 years. In 1991, the number of people in China increased by the same amount as the total population of Australia (15 million) in spite of continued progress with the one child policy. Hunger and famine are well remembered by everyone over the age of 20. China's recent agricultural progress and accomplishment has been nothing short of incredible.

To really begin to understand extension in China today, one must have an understanding of the history of the Chinese Extension system. Historians find evidence of experimental work on intensive cultivation in China as early the Han Dynasty (A.D. 25-200). The experimental results were disseminated to experienced farmers only after official approval was given. Later in the Song Dynasty (A.D. 960-1278), increasing population pressured officials to support agricultural research and technological innovation. During this time rice was promoted as a new crop for the arid north while wheat was introduced to the humid south. The term still used for "Extension" (tuiguang) was first used in this time (Delman, 1991).

During the Nationalist government era (1911-1949) a few private educational and missionary institutions undertook extension activities in the surrounding rural areas. Guangdong University set up an extension department modeled on the American experience, but the Nationalist government, in an effort to keep tight control on developments, organized the official extension service in the Ministry of Agriculture (MOA) rather than the universities, where it would have
had more independence. World War II, which started in China in 1937 with the Japanese invasion, slowed the meager accomplishments of forming a nationwide extension system (Delman, 1991).

After the revolution, the first agro-technological extension stations were established on an experimental basis in remote Northeast China in 1951. During the Great Leap Forward (1958-1961), an anti-bureaucratic mode swept the country including the extension system, with employees being sent out to the countryside to establish farm communes. All farmer managed land was removed from individual management and organized into large communal farms that would cover a township and have an average of 2000 workers. During this period, one-third of the local extension stations were closed. The extension system that emerged from this period was shattered and rather inefficient (Delman, 1991). During the Cultural Revolution (1966-1978), extension was essentially disbanded. Most of the extension stations were closed, extension employees were criticized, persecuted and many of them were forced to work as peasants in the countryside as a means of re-education. Other extension employees changed their professions and took work in other disciplines (Zou, 1992). The extension system, as well as much of the research and university system, essentially ceased to exist during this period.

Agricultural reform was brought about in 1978 with the return of control of the land to individual households. Extension faced the task of organizing a system that could provide agricultural information to 200 million households scattered across a vast and remote country. In 1982, the MOA undertook a review of the 150 County Agro-Technology Extension Centers (CATEC) and found that their experiences were positive. At this time, the government realized the need for national coordination of the Extension system and established the National Agro-Technology Extension Center (NATEC) in the MOA (Foo, 1992). The goal was established to form extension organizations in every province, prefecture, county, township and village.

Today extension organizations are present at all levels of government. Figure 1, on the field crop division of Extension, gives some idea of the number of levels of government along with some of the branches. This represents six levels of government with extension bureaucracies at each level. The Extension organization has been described as an upside down pyramid, meaning that it is very top heavy. Only 38.9% of the extension employees are at the township level where they can have direct contact and carry out programs with the farmers (Yang, 1992). To date, 1300 CATEC have been established in the 2300 counties nationwide (Foo, 1992). Catec serves a role that would be comparable to district or area extension centers in the United States. Because of the difficulty in communication and transportation, extension programming is focused on the township and village level. Currently, 38,000 Township Agro-Technology Extension Centers (TATEC) have been organized and 480,000 villages have extension staff. This accounts for extension coverage in 81% of the townships and 66% of the villages (Huang, 1992). On average, each township technician is responsible for providing educational information to 3000 farm households (Yang, 1992). Limited communication and transportation systems in rural areas creates many difficulties for extension staff in contacting large numbers of farmers.

The Animal Husbandry division of extension is another entirely separate organization from the crop division. They operate as though the other divisions do not exist. This adds to the
Figure 1. Agricultural Extension Agencies under MOA Involved in Field Crop Related Extension (Delman, 1991)
inefficiency of the extension organization in China. The Animal Husbandry division maintains bureaucracies from the national level down to the village technician. There are other extension organizations in China as well. Each of 1120 national, provincial and prefectural agricultural research institutes will typically have a group of people whose role it is to disseminate research findings of that institute (FAO, 1991). Some large state farms still exist, especially in northern China, and have their own separate extension personnel. The Communist Youth League, which is open to membership of youth 14-28 years of age, actively conducts training activities for members and non-members alike. The training focuses on appropriate technologies for sideline agricultural enterprises. The All-China Women’s Federation (ACWF) likewise offers training to women on topics such as livestock raising (Delman, 1991). This description of the Chinese Extension System helps clarify why many consider the extension organization in China to be very complex and difficult to understand.

The education levels of extension staff often limit their effectiveness. Only 7.5% of the Extension employees have college degrees with an additional 17.5% holding two-year technical degrees. Fifty three percent have degrees at agricultural high schools and 22% have nine years of schooling. At the village level, where farmer interaction is most frequent, extension is usually represented by village leaders (i.e., party officials) and part-time farmer technicians. Most farmer technicians have 6-8 years of schooling but many are working on certificates issued by the Agriculture Broadcasting School (FAO, 1991). The Agriculture Broadcasting School offers educational programs via broadcast radio. Certificates are then granted to participants who pass a qualifying exam. Courses in agricultural extension subject matter have only been introduced at agricultural colleges since 1989 (Zhang, 1992).

Ties between extension, research and educational institutions are weak to non-existent. Universities are linked to the Ministry of Education while extension and research are separate organizations within the MOA. The national research centers, which are part of the Chinese Academy of Sciences, as well as provincial and university research centers have little contact with extension personnel. Many CATEC conduct their own applied research projects. Communication is mostly vertical within each organization and then only with the levels immediately above and below. It is not uncommon to have several special applied research projects being conducted by different agencies within a county with little if any coordination between the research institutions or the local CATEC (FAO, 1991).

Each level of government is responsible for funding the organizations at their own level. This results in considerable autonomy for each level of government. Bargaining is necessary between each of the levels to agree on the goals that will be accomplished at that level in the annual agreements signed between parties. The agreements are very important because with tasks from above come resources to accomplish those goals. Much of the time of a bureaucrat, is spent on the bargaining that goes into the signing of an agreement between the levels of government immediately above and below his/her level.

Extension methods and subject matter in China has been centrally controlled. In the commune era, government leaders would decide on the agricultural technologies to be extended which would then be passed down to the commune and finally to the peasant farm worker for implementation. Since the household responsibility system was reintroduced, extension methods are less directive but still centrally controlled. Farmers do have the option to turn down new extension technologies; but, to obtain high quality seeds, fertilizer and other inputs at favorable prices, the farmers must sign a contract agreeing to use the recommended extension technology package. These extension contracts are considered highly successful and involve a written contract between the farmer and the extension organization. Extension agrees to provide certain inputs and services which may include plant protection, soil testing,
fertilizer application and mechanized farm operations for a fee. A yield goal is agreed upon and extension will reimburse the farmer if the yield falls a certain percentage below the goal. If the yield exceeds the goal by a certain percentage, then extension receives 20% of the excess as a bonus (FAO, 1991). Extension has strong incentives to provide the best supplies and services to their clients. The Chinese government is nearly frantic for continued progress to increase yields and meet the needs of an ever growing population.

Demonstration households are widely discussed and held up as an extension method. Some 4.5 million demonstration households are utilized to demonstrate new technologies to village farmers (Delman, 1991). Most CATEC and TATEC publish newsletters for farmers. Each village has a public broadcast system that Extension may use to announce meetings, pest outbreaks and other timely extension information. The village blackboard is another significant way used by farm technicians to inform their neighbors of important extension information. Radios are widely available in farm households and numbers of televisions are increasing in more prosperous farming areas and are being used increasingly to create farmer awareness of new technology (FAO, 1991). Other Extension methods include "big character posters," exhibitions, extension printed materials, newspapers, cultural media such as songs and dance and finally "slogans" which have long been used to convey complex issues in short easy to remember phrases (Foo, 1992).

Although Extension in China is very different from the United States system and it seems to have numerous inefficiencies, it is working. The national leaders of the Chinese Extension system are actively searching the world for ideas to speed reform of extension in China. The success of the Chinese Extension system and several good growing seasons, have given the agricultural leaders a new challenge: where to store the surplus of grain rather than rationing the traditional shortages.

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ALTERNATIVE APPROACHES TO TECHNOLOGY DEVELOPMENT AND ADOPTION IN AGRICULTURE

Larry S. Lev  
Department of Agricultural and Resource Economics  
Oregon State University  

David G. Acker  
Office of International Research and Development  
Oregon State University  

Contribution from Oregon State Agricultural Experiment Station as Technical Paper 10,211

Abstract  

This paper defines three alternative approaches to technology development and adoption in international agriculture: Transfer of Technology, Industry-Led Technology Development, and Participatory Action Research. It assesses the strengths and weaknesses of each approach and examines the roles played by researchers, farmers, and extension workers. Although the Transfer of Technology approach has been quite successful in many developed countries and in selected developing countries, it is not always the most effective approach. In situations when private sector resources have been mobilized, the Industry-Led Technology Development approach can save public sector resources and can increase the relevance of the technology. When broad involvement of numerous small-scale producers is necessary, the Participatory Action Research approach may be most effective. These approaches need not be competitors; flexible public sector institutions and personnel should participate in all three and be able to use them effectively in tandem.

Introduction  

This paper defines three alternative approaches to technology development and adoption in international agriculture: Transfer of Technology, Industry-Led Technology Development, and Participatory Action Research. It assesses the strengths and weaknesses of each approach and examines the roles played by researchers, farmers, and extension workers. While past discussions have centered on different models of technology development and adoption as if they were competing approaches, this paper treats them as complementary approaches that can work effectively in tandem. This examination provides a foundation for researchers, extension staff and farmers to recognize the approaches that are appropriate to specific situations and thereby should enable them to work together more effectively. Table 1 summarizes the three approaches.

Transfer of Technology  

The Transfer of Technology (TOT) approach is the dominant paradigm for technology development and adoption in agriculture (Chambers, et al., 1992). It is organized as a sequence of steps from research through extension to farmers and produces a largely one-way flow of information (with some potential for feedback). Generally, the approach has been operationalized by drawing a box around a group of functions and creating a separate and dedicated organization to deal with each box (Figure 1). The TOT model for agriculture can be compared to a relay race along a straight path in which the first runner sets the direction and successive runners are responsible for advancing
the baton (technology) that has been passed along to them.

Public sector research and extension staff have played major roles in this technology development and adoption process. There are three primary justifications for this significant public involvement in the TOT process for agriculture. First, agricultural sectors are generally characterized by many independent farms and the individual farmers lack the resources to conduct their own research. Second, because of the structure of agricultural markets, individual farmers cannot easily retain the benefits derived from the new technologies. Third, a publicly-financed dissemination or extension phase of the process is required because of the wide knowledge gap between technology developers (scientists) and technology users (farmers). Someone must fill the role of translator between these two groups.

All TOT approaches are based on the assumption that scientists know or can learn what farmers need and can develop solutions to their problems using science. In comparison to other approaches we will consider, this approach treats farmers (the last runners in the relay race) primarily as recipients of technology. There is, however, considerable variation among the TOT approaches, ranging from research conducted in near isolation from the world of farmers, to research in which farmers are frequently questioned and/or consulted.

TOT approaches take advantage of gains from specialization as each group focuses on its own role in the process and largely ignores the roles of others. The approach can be credited with successful technology development and adoption in developed countries as well as the effectiveness of the green revolution technologies in numerous developing countries. Although this is the dominant paradigm, it hasn't worked effectively in all situations. While clear and straightforward, this linear approach to problem solving often leaves little room for the incorporation of diverse forms of input and reduces the potential for iteration. Unsuccessful TOT occurs when technologies developed by researchers are not adopted by farmers. In these situations two conclusions are common: 1) extension is not doing its job, and/or 2) farmers are slow to catch on to new technologies (Chambers, et al., 1992). There are, however, more likely explanations for these 'failures.' First, the initial research may be misdirected resulting in technologies that are inappropriate for end-user (farmer) needs. This has been particularly true for low-income-resource-poor farmers who cannot easily communicate their needs and wishes back up the TOT chain (Merill-Sands and Kaimowitz, 1989). As a second problem, the linkage between the various groups (not just the

<table>
<thead>
<tr>
<th>World Stock of Knowledge</th>
<th>Basic Research/Technology Testing</th>
<th>Applied/Adaptive Research</th>
<th>Technology Integration</th>
<th>Diffusion and Farmer Adoption</th>
</tr>
</thead>
</table>

Source: Adapted from McDermott (1987, p. 91)

Figure 1. Stylized Sequence of Steps in the Transfer of Technology.
<table>
<thead>
<tr>
<th>Table 1. Approaches to Technology Development and Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actors and Characteristics</strong></td>
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<tr>
<td><strong>Overall Performance</strong></td>
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<tr>
<td><strong>Strengths</strong></td>
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<td><strong>Weaknesses</strong></td>
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<td><strong>Research Scientists</strong></td>
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<td><strong>Role</strong></td>
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<td><strong>Contribute</strong></td>
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<td><strong>Receive</strong></td>
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<tr>
<td><strong>Extension Staff</strong></td>
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<tr>
<td><strong>Role</strong></td>
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<td><strong>Contribute</strong></td>
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<td></td>
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<tr>
<td><strong>Receive</strong></td>
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<td></td>
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<tr>
<td><strong>Farmers</strong></td>
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<tr>
<td><strong>Role</strong></td>
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<td></td>
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<tr>
<td><strong>Contribute</strong></td>
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<td></td>
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<tr>
<td><strong>Receive</strong></td>
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</tbody>
</table>

* ILTD is generally led by agribusiness firms
extension-farmer link) may not be sufficiently well developed to allow the chain as a whole to perform effectively. Clearly setting the initial direction and passing the baton are the most critical phases in a relay race and the same is true for TOT. If there are problems with either of these activities, TOT will not work well.

Farming Systems Research and Extension (FSR/E) developed largely as a response to these perceived problems of the top-down, linear approach to technology development (Caldwell, 1987). In FSR/E, more attention is paid to farmer needs and to developing appropriate teamwork among TOT participants. FSR/E often is viewed as a transitional stage between the TOT approach and the Participatory Action Research model described below.

Two other approaches, Industry - Led Technology Development and Participatory Action Research, that have developed as alternatives to TOT and that may be more successful in certain circumstances are presented.

Industry Led Technology Development

In developed countries, such as the United States, the standard TOT approach has been modified as a result of changing conditions. Other actors (primarily agribusiness firms) have become major players in the technology development arena. In addition to conducting their own research, they also provide funds to support targeted public sector research. To a lesser extent, farmer groups also support and influence the research agenda through the provision of targeted funds and through their involvement in setting national priorities for agricultural research (Buttel et al., 1986; Feller, 1986).

Changes also have occurred in the dissemination of new technologies. First the increase in farmer capability to directly communicate with researchers means that many producers no longer require or prefer working through extension "translators" (Feller, 1987). Second, many additional networks for dissemination are now available including private radio, television and print organizations. Perhaps most important, however, many agribusiness firms include dissemination as a component of an overall sales program.

In the second set of approaches, we have grouped these changes together under the broad title of "industry-led technology development" (ILTD) because they all represent modifications of the TOT process. Clearly, these changes require the public sector to alter its role since there is a reduced need to spend public funds and resources on tasks achieved by the private sector (Frisvold, 1991). Of equal importance, having the research process initiated and supported by industry may improve the relevance and practicality of the research.

In the U.S. the growing importance of privately bred varieties of the cool-season grass seed industry represents an example of this trend. The 1970 Federal Plant Variety Protection Act provided proprietary protection by granting rights to private breeders for exclusive propagation and sale of grass seed under private varietal labels. As a consequence the acreage of private variety grass seeds planted in Oregon's Willamette Valley increased from 10% of all grass seed acres in 1979 to 30% in 1987 (Conklin et al., 1989). As an example of the growth in privately developed grass seed varieties consider that as recently as 1978 only 11 tall fescue varieties were produced in Oregon. In 1991, after the dramatic increase in private breeding efforts, 131 different tall fescue varieties (representing more than 80 percent of tall fescue acreage) were in production. Since it is much more difficult for private firms to retain the benefits of agronomic research, much of that type of research is still conducted by public institutions.

An example of technology development led by farmer associations in a developing country can be found in the Senegal Natural Resources-Based Agricultural Research Project. Mechanisms established in this project help farmers and farm associations to determine research priorities relevant to their needs, to hire
researchers or other technical assistance, and to hold researchers accountable for results. In this case, extension workers serve a liaison function helping farmers and farm associations to communicate and negotiate with researchers. Several concerns have arisen in response to this new approach to technology development and adoption. First, there is the concern that the funds provided by industry will be leveraged to influence public research objectives to a greater extent than the money itself would warrant. As a result, public research may be unduly directed toward private gain (Feller, 1986). A second concern is that as the private sector replaces the public sector at various points in the technology development chain, producers and/or consumers will no longer have neutral sources of information and assistance available to them.

Returning to the previous sports analogy, ILTD can be characterized as a relay race with fewer team members and a new lead runner. As a result, two major changes occur; someone different is setting the direction (the industry) and there are fewer baton exchanges. A comparison between the ILTD and TOT systems depends on an examination of the gains from better targeting and reduced costs of research dissemination versus losses from allowing private actors to direct the process toward their own gain.

In developed countries, ILTD exists as a parallel system to TOT. It is up to the public sector to retrain its personnel and reallocate its resources so that society as a whole is a net winner from this infusion of private resources and improvement in private capabilities.

**Participatory Action Research**

The third approach to technology development and adoption integrates farmers as co-learners and co-participants in a participatory action research (PAR) process. PAR approaches assume that farmers, scientists and extensionists all contribute critical but different types of knowledge to the process of technology development. PAR is informed by theories from the collaborative learning and participatory action research paradigms (Whipple, 1987; Whyte, 1991). Following these paradigms technology transfer does not occur as a separate activity because technologies are jointly developed with farmer and researcher involvement.

While ILTD represents a fine-tuning and streamlining of TOT, the third approach, PAR, represents a fundamentally different concept of the entire process. An alternative to the relay race approach to technology development proposed by Takeuchi and Nonaka (1986) is a team composed of the required specializations that work together much as a rugby team composed of players with different skills moves the ball down field as a unit by passing the ball back and forth. This allows for a reduction in specialization and encourages "multilearning" by team members of different aspects of the process. In order to perform this effectively players in the technology development and adoption process must learn a new game.

According to Lewin (1946), participatory action research is special in two ways. First, the client is involved as an active collaborator in the generation of knowledge. Second, action research takes place in the real world and derives lessons from that world. Whyte (1991), who shares Lewin's view observed that:

Science is not achieved by distancing oneself from the world; as generations of scientists know, the greatest conceptual and methodological challenges come from engagement with the world (p. 21).

PAR approaches may reduce what Roling (1982) called the "splendid isolation" of technology innovation as they modify the traditional, top-down, scientist-driven technology transfer. Freire (1970) provided one of the conceptual foundations for this thinking as he argued for the abolishment of sender-receiver relationships and for the notion of learners engaged in a process where both could contribute and both would benefit.
MaClure and Bassey (1991) distinguish PAR from traditional research strategies based on three characteristics:

1. shared ownership of the research enterprise,
2. promotion of community-based learning, and
3. stimulation of community-initiated action.

Since the process instills in participants a sense of personal identification and ownership with the learning or discovery effort, it is much more likely the participants will apply what they have learned.

Although some have argued that PAR is no different from the approach taken in FSR/E, we do not share that view. The FSR/E literature focuses on developing procedures to enable social and technical scientists to work together to learn from but not with farmers. Within PAR farmers are viewed as participants in a three-way collaborative learning process among social scientists, technical scientists and farmers.

World Neighbors, an established non-governmental organization, began using an "experimenting farmers" approach more than two decades ago (Bunch, Ewert & Gobbels, 1992). The approach grew out of a recognition of the natural abilities of farmers to conduct independent inquiry for problem solving. Progress is being made in valuing and utilizing indigenous knowledge in the agricultural research and development process (Warren, 1989). Farmers learn to manage their own technology acquisition system for access to resources of technical assistance, inputs, and other needs. Farmers create new knowledge rather than serve as recipients of new knowledge. These approaches aim to instill capacity in farmers to shape their own destiny. They encourage research which helps to transform both the individual through empowerment (learning how to learn) and the production system through technology improvement.

PAR can be employed in sustainable agricultural research and extension in that it is able to incorporate complex technologies to assist the many small growers who operate within multi-faceted systems. Due in large measure to the multiple perspectives incorporated in the PAR process it has proven to be an effective approach to solving complex problems occurring at the interface between technology and society.

Two primary factors restrict the usefulness of PAR approaches. First, the process tends to be slow and time consuming. Second, it does not capitalize on potential gains from specialization. As a consequence a PAR approach is only appropriate for a subset of technology development and adoption situations.

Institutional and Educational Challenges

The challenges of technology development and adoption will be diverse as one looks towards the future. In many instances, public sector scientists/extension staff will continue to be required to function as relay runners and effectively pass the baton from one leg of the race to the next. In other instances, private sector actors will step in and fulfill some of these roles and the public sector will have to figure out how to better coordinate their activities with private sector researchers, disseminators and producers. Within the ILTD and PAR approaches these new roles will include assessing situations, determining what problem-solving approach is best for specific situations, revising priorities, serving as a neutral evaluator of privately developed technologies or facilitating a process of farm-based problem solving.

To support the simultaneous achievement of these multiple approaches to technology development and adoption will require flexible and responsive institutions. In general, this implies a decentralization of authority so that appropriate local decisions can be made as well as a reduction of internal barriers to permit
cooperation across functions and disciplines. It also requires that institutions be willing to accept and embrace multiple approaches to technology development and adoption. Institutional relevance to society, and ultimately sustainability, may well depend on this flexibility.

In seeking to work with new audiences and in new ways, public sector personnel will have to learn new skills and new approaches. Job responsibilities will be broadened and blurred, increased responsiveness to clientele needs will be expected and process skills such as group facilitation will be required. The precision of a relay race will need to be replaced by the messiness of a rugby scrum. Training for future participants in the scrum will require the introduction of new sets of skills and behaviors. The current "Transfer of Technology" approach to formal education in which the building blocks of agricultural knowledge are provided in incremental doses may be replaced by more systemic and experiential approaches such as extensive field-based interactions with farmers and rural communities that can help to prepare extension and research personnel to be ready to tackle complex technical and societal problems (Bawden et al., 1984).

References


Merill-Sands, D. & Kaimowitz, D., (1989). The technology triangle: Linking farmers, technology transfer agents, and agricultural


PROFESSIONAL COMPETENCIES NEEDED BY EXTENSION SPECIALISTS AND AGENTS IN IRAN

Gholamreza Pezeshki-Raad
Graduate Assistant
Department of Agricultural and Extension Education
The Pennsylvania State University

Edgar P. Yoder
Associate Professor

James E. Diamond
Assistant Professor

Department of Agricultural and Extension Education
The Pennsylvania State University

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Introduction

The formal agricultural extension service in Iran came into being in 1953, and since its inception has been affected by changes in government and agricultural policies (Salmanzadeh, 1988). In 1964 the White Revolution introduced by the then Shah of Iran had a generally negative impact on extension and agriculture. Subsequently extension agents generally came to be perceived by the public as less effective and personally became more demoralized, and farmers were less accepting of ideas from extension personnel (Malak-Mohammady, 1988). This ultimately was viewed as inhibiting the capacity of farmers to produce sufficient food for the country. Malak-Mohammady noted that until 1964 Iran was self-sufficient in food production, but began to import food subsequent to the implementation of the White Revolution. The decline in the perceived effectiveness of the extension service in Iran continued during the Islamic Revolution. Salmanzadeh (1988) noted that the revolutionary authorities upon coming to power in 1979 stressed they were committed to achieving self-sufficiency in agriculture through the development of peasant agriculture. Extension in Iran has been identified in the current five-year development plans as a critical element for again attaining agriculture self-sufficiency. Attainment of agricultural self-sufficiency requires competent extension personnel planning and implementing educational programming to meet farmers' needs.

Waldman and Spangler (1989) indicated that part of an organization's overall effectiveness is influenced by the job knowledge and skills possessed by organizational employees. Extension agents and specialists need skill and competence to design, implement and evaluate educational programs for farmers. Lack of a proper balance between technical and professional competencies in staff has been identified as a common problem in the extension services of developing countries (Bradfield, 1966; Maunder, 1972; Easter, 1985). According to Easter, one of the weaknesses in past approaches in preparing extension personnel in developing countries has been the inability to focus on the development of professional competencies. A number of studies have identified professional competencies needed by extension personnel in various countries (Randavay & Vaughn 1991; Najjingo-Kasujja & McCaslin, 1991; Easter, 1985; Ongondo, 1984; Ayewoh, 1983; Umuhak, 1980; Gonzalez, 1982; Al-Zaidi, 1979; Karami, 1979; Boonruang, 1973; Smitananda, 1958; Sabihi, 1978). The findings from these studies indicate that extension agents in developing countries should possess professional competence in the areas of administration, program planning and execution, evaluation, communications, teaching and extension methods, and understanding human behavior.

When professional competencies should be learned (developed) by extension agents has been examined by several researchers. Gonzalez (1982) identified 144 competencies needed by
extension agents in Pennsylvania. Of 144 competencies, 26 were identified as appropriate for development before entering the job, 6 during a graduate program and the remaining 113 through inservice education. Similar findings were reported by Ayewoh (1983) for extension agents in Nigeria. Conversely Ongondo (1984) found that for a majority of the extension agents in Kenya, competencies should be developed before entering the job.

Other researchers examined differences or relationships between demographic characteristics of extension personnel and the perceived level of competency needed by extension agents. Findings from these studies indicate that variables such as age (Gonzalez, 1982; Sabihi, 1978), educational level (Najjingo-Kasuja & McCaslin, 1991) and prior work experience are related to the perceived importance of specific professional competencies needed by extension agents. However, Easter (1985) found no significant differences between the perceived level of competencies needed for Swaziland extension agents and demographic characteristics such as age, gender, educational level, position, area of responsibility and prior experience.

Sabihi (1978) examined the professional educational training needs of extension specialists and agents in selected provinces (states) of Iran, and recommended that further research should be conducted in other states of Iran. Thus, this study examined the professional competencies needed by extension agents and specialists in Khorasan State of the Islamic Republic of Iran (IRI).

Purpose and Objectives of the Study

This study examined the professional competencies needed by extension specialists and extension agents in Khorasan State, IRI. Objectives of the study were:

1. To identify the professional competencies needed by extension specialists and agents and identify differences in competencies needed by extension agents and extension specialists in Khorasan State of IRI.

2. To determine when the professional competencies should be learned as perceived by extension agents and specialists.

Methods and Procedures

The study represented descriptive survey research. The population for this study consisted of all 68 extension specialists and the 218 extension agents employed in Khorasan State of IRI. The population frame was obtained from State's Department of Agriculture, Khorasan State, IRI.

The researchers developed the survey instrument by adapting components from the instruments developed by Gonzalez (1982), Easter (1985), Ongondo (1984), and Ayewoh (1983). Face and content validity of the instrument was established using a panel of experts consisting of senior faculty members in agricultural and extension education. Subsequently the instrument was translated into Farsi. The Farsi version of the instrument was reviewed for content validity by personnel in the Ministry of Agriculture and the Department of Agriculture, Khorasan State of IRI. The revised Farsi version of the instrument was field tested with 10 extension specialists and agents in Mazandaran, a neighboring state in IRI.

After incorporating their suggestions, the final version of the instrument contained two major sections. Section one contained 125 competencies grouped within 8 competency categories (administration, program planning, program execution, teaching, communication, understanding human behavior, maintaining professionalism and evaluation). Items in this section were rated in terms of being needed by extension personnel using a scale that ranged from 1=no value, 2=low value, 3=moderate value, 4=high value, 5=very high value. In addition, perceptions when the competencies should be learned (pre-service or inservice) were also examined. Section two of the survey elicited demographic information from
specialists and agents (native of the region, dialect spoken, age, marital status, gender, position title, subject matter specialty, administration and teaching responsibilities, total years experience in extension and in the current position, highest education level, number of personnel supervised, and place of residence).

Data for this study were collected through a mail survey. A total of 227 responses were usable (79%). According to procedures suggested by Miller and Smith (1983), early and late respondents were compared on key study variables. No practical differences existed between early and late respondents on the key variables examined. These variables included the demographic variables and the overall mean competency statement values in each of the eight competency categories. Thus, the findings of the study were generalized to the entire population. A reliability analysis, conducted using the final study returns for the 227 respondents, indicated that the instrument had acceptable reliability. Cronbach's alpha values ranged from a low of .82 (evaluation) to a high of .93 (administration).

**Results**

**Professional Competencies Needed**

The professional competencies needed, based on perceived value, by extension agents are presented in Table 1. Based on respective mean values, only the three highest rated competencies in each of the eight competency areas are reported in this article. Following are the eight highest rated competencies: Managing time effectively (4.44) in the administration category; determine needs of clients for extension programs (4.39) in the program planning category; develop a working relationship with clientele (4.41) in the program execution category; present information with televised and video-taped materials (4.46) in the area of teaching; establish communication among extension staff (4.21) in the communication category; identify pressure groups within the community (4.36) in the understanding human behavior category; identity opportunities for professional improvement (4.36) in maintaining professionalism; and use the experimental approach in extension work (4.48) in the evaluation category.

The professional competencies needed, based on perceived value, as reported by specialists are presented in Table 2. Only the three highest rated competencies in each of the eight competency areas are reported. Following are the eight highest rated competencies: Write realistic goals for the extension programs (4.54) in administration; determine the needs of clients for extension programs (4.42) in the program planning category; use a variety of techniques to influence people to change (4.40) in the program execution category; present information with televised and video-taped materials (4.57) in the area of teaching; prepare extension publications (4.31) in the communication category; recognize traditional culture and its effect on change (4.43) in the understanding human behavior category; identity opportunities for professional improvement (4.38) in maintaining professionalism; and use the experimental approach in extension work (4.66) in the evaluation category.
Table 1. Means and Standard Deviations for the Three Highest Rated Professional Competencies Needed by Extension Agents Within Each Competency Category.

<table>
<thead>
<tr>
<th>Competency Category</th>
<th>N</th>
<th>Mean*</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1) Manage time effectively</td>
<td>153</td>
<td>4.44</td>
<td>.77</td>
</tr>
<tr>
<td>2) Develop the leadership potential of staff</td>
<td>153</td>
<td>4.39</td>
<td>.82</td>
</tr>
<tr>
<td>3) Write realistic goals for the extension program</td>
<td>155</td>
<td>4.38</td>
<td>.73</td>
</tr>
<tr>
<td>Program Planning</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1) Determine needs of clientele for extension programs</td>
<td>155</td>
<td>4.39</td>
<td>.68</td>
</tr>
<tr>
<td>2) Determine objectives/goals of the extension programs</td>
<td>155</td>
<td>4.19</td>
<td>.80</td>
</tr>
<tr>
<td>3) Develop a calendar of extension activities</td>
<td>154</td>
<td>4.19</td>
<td>.80</td>
</tr>
<tr>
<td>Program Execution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Develop a working relationship with clientele</td>
<td>155</td>
<td>4.41</td>
<td>.72</td>
</tr>
<tr>
<td>2) Use variety of techniques to influence people to change</td>
<td>155</td>
<td>4.34</td>
<td>.85</td>
</tr>
<tr>
<td>3) Conduct farm visits</td>
<td>155</td>
<td>4.33</td>
<td>.73</td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Present information with televised/video-taped material</td>
<td>155</td>
<td>4.46</td>
<td>.82</td>
</tr>
<tr>
<td>2) Plan, organize, and conduct tours and field trips</td>
<td>155</td>
<td>4.43</td>
<td>.73</td>
</tr>
<tr>
<td>3) Present information with sound motion pictures</td>
<td>155</td>
<td>4.34</td>
<td>.82</td>
</tr>
<tr>
<td>Communication</td>
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<td></td>
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<tr>
<td>1) Establish communication among extension staff</td>
<td>154</td>
<td>4.21</td>
<td>.68</td>
</tr>
<tr>
<td>2) Use a camera and/or other photographic equipment</td>
<td>154</td>
<td>4.19</td>
<td>.82</td>
</tr>
<tr>
<td>3) Prepare extension publication</td>
<td>155</td>
<td>4.13</td>
<td>.87</td>
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<tr>
<td>Understanding Human Behavior</td>
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<tr>
<td>1) Identify pressure groups within the community</td>
<td>154</td>
<td>4.26</td>
<td>.93</td>
</tr>
<tr>
<td>2) Recognize traditional culture and its effect on change</td>
<td>155</td>
<td>4.14</td>
<td>.88</td>
</tr>
<tr>
<td>3) Recognize learning differences in age groups</td>
<td>154</td>
<td>4.05</td>
<td>.85</td>
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<tr>
<td>Maintaining Professionalism</td>
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<td></td>
<td></td>
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<tr>
<td>1) Identify opportunities for professional improvement</td>
<td>154</td>
<td>4.36</td>
<td>.74</td>
</tr>
<tr>
<td>2) Develop a plan for professional development</td>
<td>155</td>
<td>4.23</td>
<td>.78</td>
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<tr>
<td>3) Establish and maintain a professional philosophy</td>
<td>154</td>
<td>3.97</td>
<td>.89</td>
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<tr>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1) Use the experimental approach in extension work</td>
<td>155</td>
<td>4.48</td>
<td>.81</td>
</tr>
<tr>
<td>2) Cooperate with research stations</td>
<td>155</td>
<td>4.47</td>
<td>.78</td>
</tr>
<tr>
<td>3) Interpret research findings from research stations</td>
<td>154</td>
<td>4.40</td>
<td>.90</td>
</tr>
</tbody>
</table>

*Mean computed on a scale of 1="no value" through 5="very high value."
Table 2. Means and Standard Deviations for the Three Highest Rated Professional Competencies Needed by Extension Specialists Within Each Competency Category.

<table>
<thead>
<tr>
<th>Competency Category and Competency Statement</th>
<th>N</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Write realistic goals for the extension program</td>
<td>68</td>
<td>4.54</td>
<td>.63</td>
</tr>
<tr>
<td>2) Manage time effectively</td>
<td>68</td>
<td>4.51</td>
<td>.74</td>
</tr>
<tr>
<td>3) Orient new staff members</td>
<td>68</td>
<td>4.47</td>
<td>.66</td>
</tr>
<tr>
<td>Program Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Determine needs of clientele for extension programs</td>
<td>67</td>
<td>4.42</td>
<td>.66</td>
</tr>
<tr>
<td>2) Determine objectives/goals of the extension programs</td>
<td>68</td>
<td>4.41</td>
<td>.63</td>
</tr>
<tr>
<td>3) Develop a calendar of extension activities</td>
<td>68</td>
<td>4.29</td>
<td>.67</td>
</tr>
<tr>
<td>Program Execution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Use variety of techniques to influence people to change</td>
<td>67</td>
<td>4.40</td>
<td>.70</td>
</tr>
<tr>
<td>2) Conduct farm visits</td>
<td>68</td>
<td>4.37</td>
<td>.73</td>
</tr>
<tr>
<td>3) Provide leadership for program planning and execution</td>
<td>68</td>
<td>4.34</td>
<td>.64</td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Present information with televised/video-taped material</td>
<td>68</td>
<td>4.57</td>
<td>.56</td>
</tr>
<tr>
<td>2) Present information with sound motion pictures</td>
<td>68</td>
<td>4.51</td>
<td>.59</td>
</tr>
<tr>
<td>3) Identify/use principles/procedures in teaching adults</td>
<td>68</td>
<td>4.49</td>
<td>.68</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Prepare extension publication</td>
<td>68</td>
<td>4.31</td>
<td>.74</td>
</tr>
<tr>
<td>2) Use a camera and/or other photographic equipment</td>
<td>68</td>
<td>4.15</td>
<td>.68</td>
</tr>
<tr>
<td>3) Establish communication among extension staff</td>
<td>68</td>
<td>4.09</td>
<td>.92</td>
</tr>
<tr>
<td>Understanding Human Behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Recognize traditional culture and its effect on change</td>
<td>68</td>
<td>4.43</td>
<td>.76</td>
</tr>
<tr>
<td>2) Identify pressure groups within the community</td>
<td>68</td>
<td>4.22</td>
<td>.94</td>
</tr>
<tr>
<td>3) Identify factors influencing people to become involved</td>
<td>68</td>
<td>4.22</td>
<td>.62</td>
</tr>
<tr>
<td>Maintaining Professionalism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identify opportunities for professional improvement</td>
<td>68</td>
<td>4.38</td>
<td>.75</td>
</tr>
<tr>
<td>2) Develop a plan for professional development</td>
<td>68</td>
<td>4.29</td>
<td>.79</td>
</tr>
<tr>
<td>3) Establish and maintain a professional philosophy</td>
<td>68</td>
<td>3.97</td>
<td>.77</td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Use the experimental approach in extension work</td>
<td>68</td>
<td>4.66</td>
<td>.53</td>
</tr>
<tr>
<td>2) Identifying problems requiring additional research</td>
<td>68</td>
<td>4.59</td>
<td>.58</td>
</tr>
<tr>
<td>3) Apply research findings</td>
<td>68</td>
<td>4.54</td>
<td>.68</td>
</tr>
</tbody>
</table>

*Mean computed on a scale 1="no value" through 5="very high value."
Table 3. Differences in Extension Agents and Specialists' Perceptions of Level of Competence Needed.

<table>
<thead>
<tr>
<th>Competency Category and Competency Statementa</th>
<th>Agents Meanb SD</th>
<th>Specialists Meanb SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Explain terms of service</td>
<td>3.97 .99</td>
<td>3.64 1.01</td>
</tr>
<tr>
<td>2) Coordinate work schedules of staff</td>
<td>3.90 .86</td>
<td>4.25 .79</td>
</tr>
<tr>
<td>3) Resolve conflicts</td>
<td>3.77 1.05</td>
<td>3.36 1.05</td>
</tr>
<tr>
<td>Program Planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Determine objectives/goals of the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>extension program</td>
<td>4.19 .80</td>
<td>4.41 .63</td>
</tr>
<tr>
<td>2) Prepare an annual program of work</td>
<td>3.95 .94</td>
<td>4.27 .71</td>
</tr>
<tr>
<td>3) Prepare a long-range program of work</td>
<td>3.76 .90</td>
<td>4.12 .83</td>
</tr>
<tr>
<td>Program Execution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Provide leadership for program planning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and execution</td>
<td>4.04 .94</td>
<td>4.34 .64</td>
</tr>
<tr>
<td>2) Arrange for transport of extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>personnel and clientele</td>
<td>4.09 .85</td>
<td>3.81 .92</td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identify &amp; use principles &amp; procedures in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>teaching adults and youth</td>
<td>4.25 .94</td>
<td>4.49 .68</td>
</tr>
<tr>
<td>2) Use principles of learning and teaching</td>
<td>4.12 .96</td>
<td>4.46 .61</td>
</tr>
<tr>
<td>3) Present information in a lecture</td>
<td>4.05 .78</td>
<td>3.81 .89</td>
</tr>
<tr>
<td>4) Develop teaching materials</td>
<td>3.94 .83</td>
<td>4.24 .74</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Prepare research journal articles</td>
<td>3.79 .87</td>
<td>4.04 .86</td>
</tr>
<tr>
<td>2) Deal with complaints</td>
<td>3.83 1.04</td>
<td>3.46 1.04</td>
</tr>
<tr>
<td>Understanding Human Behavior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Recognize traditional culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and its effect on change</td>
<td>4.14 .88</td>
<td>4.43 .76</td>
</tr>
<tr>
<td>2) Identify factors influencing people to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>become involved</td>
<td>4.03 .73</td>
<td>4.22 .62</td>
</tr>
<tr>
<td>3) Apply principles of motivation</td>
<td>3.87 .88</td>
<td>4.22 .71</td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Identify problems requiring additional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>research</td>
<td>4.36 .82</td>
<td>4.59 .58</td>
</tr>
<tr>
<td>2) Evaluate the effectiveness of extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>programs</td>
<td>4.12 .80</td>
<td>4.47 .66</td>
</tr>
<tr>
<td>3) Evaluate the performance of extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>staff</td>
<td>4.23 .88</td>
<td>4.46 .78</td>
</tr>
<tr>
<td>4) Keep up-to-date with current research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>findings</td>
<td>4.07 .85</td>
<td>4.39 .72</td>
</tr>
<tr>
<td>5) Interpret results of questionnaires</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.85 .91</td>
<td>4.16 .92</td>
</tr>
<tr>
<td>6) Analyze reports</td>
<td>3.86 .98</td>
<td>4.16 .75</td>
</tr>
</tbody>
</table>

a Only competencies with significant differences between the means >.2 are reported.

b Mean computed on a scale 1="no value" through 5="very high value."
Table 4. Distribution of Respondents' Preferences for When Competencies Should be Developed (N=227).

<table>
<thead>
<tr>
<th>Competency Category</th>
<th>Time for Development</th>
<th>Total Items per Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-service</td>
<td>In-service</td>
</tr>
<tr>
<td>Administration</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>Program Planning</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Program Execution</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Teaching</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Communication</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Understanding Human Behavior</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Maintaining Professionalism</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Evaluation</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4</td>
<td>121</td>
</tr>
</tbody>
</table>

Differences Between Agents and Specialists

The perceived differences between agents and specialists relative to the perceived value of professional competencies are shown in Table 3. Since this study involved a census, inferential statistics were not used. To determine if substantive differences existed, the investigators established a difference in means of .2 or higher as indicating a substantive difference in perceptions of agents and specialists. The greatest number of competency statements for which the difference criterion was met existed in the evaluation competency area.

Learning of Competencies

Data regarding when the professional competencies should be learned as perceived by agents and specialists are presented in Table 4. Overall the trend is that both agents and specialists reported more frequently that the professional competencies should be developed at the in-service level rather than at the pre-service level. There were four competencies in the administration competency area identified as needing to be developed at the pre-service level.

Educational Implications

There appear to be two general areas in which the results have educational implications for extension personnel. Both of these areas relate to the renewed emphasis being given to extension in Iran's renewed commitment to agricultural self-sufficiency. As Iran expands the number of personnel in extension, there will initially be more people entering the extension system who do not have previous extension experience or preparation. Thus the two areas of educational implications relate first to the development of pre-service programs to prepare extension personnel and second to continuing education programs for employed extension personnel.

In Iran there are currently underway efforts to develop pre-service programs which would provide opportunities for persons to complete a professional extension education program prior to entering the extension system. The current five-year development plan calls for new hires to initially have the equivalent of an associate degree and ultimately new hires to hold a bachelor's degree prior to employment as an extension agent. The results of the current study suggest that current extension personnel
do not perceive the need for many professional extension competencies to be learned at the pre-service level. The investigators contend that many current extension employees report perceptions based upon what they experienced. It is recommended that a core of credible, currently employed extension personnel serve in an advisory capacity to university personnel responsible for developing pre-service extension programs. A primary purpose of this advisory group would be to identify the most appropriate competencies to be used as the critical core in designing pre-service programs. We believe such an approach will help lend credibility to the emerging pre-service programs and provide an avenue for continuing assessment regarding the implementation of the pre-service program.

The study results suggest that almost all the professional competencies should be learned or developed after the agents are employed. This suggests that even after pre-service programs are implemented there remains a substantial need for continuing education programs for extension personnel. This will require an articulated continuing education program which addresses the specific professional needs of agents.

References


NGO-GOVERNMENT PARADIGMS IN AGRICULTURAL DEVELOPMENT: 
A RELATIONSHIP OF COMPETITION OR COLLABORATION?

David M. Mattocks, Program Officer 
Roger E. Steele, Program Officer 
Winrock International Institute for Agricultural Development 
Center for Institutional and Human Resource Development 
Route 3, Petit Jean Mountain 
Morrilton, Arkansas 

Abstract

Several organizational features provide Non-Governmental Organizations (NGOs) with 
an effective bridge between agricultural resources and local communities. These 
organizational features include effective mechanisms that allow NGOs to embrace more 
proactive and participatory approaches to agricultural development. This paper reports on 
a comparative analysis of the organizational characteristics of selected NGOs in Malawi 
and Zimbabwe. Participatory and proactive organizational features were found to place 
these case NGOs in unique positions as intermediaries providing feed-back and dialogue 
with farmers. It is through increased NGO-government collaboration that more 
responsive development models can be achieved to close the gaps between the public-
sector agricultural establishment and the resource poor farmer.

Introduction

The predominant linear view of technology 
transfer is insufficient for addressing complex 
agricultural problems that exist, especially in 
limited-resource regions of the world. The 
continued ingrained belief that agricultural 
technology is best developed by the researcher, 
then delivered by an extension agent, and finally 
adopted by a farmer is a hindrance to poverty-
 alleviation. The agricultural extension literature 
is infected with language that reflects the one-
way paradigm. Even though most informed 
writers are making a well-intentioned attempt to 
incorporate more feedback mechanisms into 
their technology transfer model, they are unable 
to move away from their top-down thought 
processes. One critic recently noted the linear 
and prescriptive nature of many technology 
transfer models:

The chain can be quite long. For instance, in the T&V extension model it is assumed that the 
information flows, in the best of cases, from researcher to subject matter specialists, from 
them to field level workers (unless the information is transmitted first through an 
agricultural officer) and then via a contact farmer (hopefully an opinion leader) directly or 
indirectly to other farmers (Blum: 1991).

One-way paradigms of extension have been 
thoroughly criticized in recent years (Röling, 
1988; Chambers & Jiggins, 1986; Compton, 
1984; Mattocks, 1990). According to a World 
Bank study (1985), inadequate linkages between 
research and extension establishments are a 
major weakness of development. Public sector 
research and extension have had limited success 
working with resource-poor farmers.

Over the past three decades, nongovernmental 
organizations (NGOs) have been recognized by 
development experts as having a legitimate role 
in agricultural development. Arising perhaps 
because of chronic development needs that have 
remained unmet through existing organizational 
mechanisms, NGOs are filling a critical niche in 
agricultural development.

NGOs play an increasingly important role in 
agricultural research and extension in less 
developed countries, particularly in localities 
where the institutional infrastructure is weak. In
these areas, the ability of public sector research and extension institutions to serve poorer farmers and communal holdings is especially limited by inadequate financial support, human resources, and facilities (de Treville, 1991:)

Due to the far-reaching linkages that NGOs typically possess with resource poor farmers and grass-roots organizations, these flexible organizations offer considerable advantages in the area of agricultural development. The NGO community also presents some refreshing alternative programmatic approaches that, when contrasted with the dominant agricultural technology transfer/extension paradigm, can be instructive.

This paper documents the strategic role that NGOs are playing in extension and participatory research. Bridging and networking features that have emerged among the NGO community in the area of agriculture are presented for comparison and contrast to other development sectors.

The paper is an exploratory analysis of approaches and emerging models of extension used by leading NGOs involved in agricultural development in Zimbabwe and Malawi. The paper is intended to assist the reader in visualizing an enhanced role for NGOs in development and how NGOs provide an important bridge between research establishments and resource poor farmers.

Data were gathered from personal interviews, site visits, and documents from selected NGOs. These NGO case documents collectively form a data base for the generation of analyses and conclusions. Organizational features, specifically those related to extension and participatory research, are examined through comparative analysis techniques.

Comparative Analysis

Most NGOs were borne out of philanthropic ideals. These ideals represent a blend of broad humanitarian causes and special organizational interests. A large majority of NGOs who today are focused on agricultural development were originated as disaster-response agencies, formed to function in the area of relief work. As the NGO relief organizations became more experienced, most have made a rapid journey toward offering more development-type programs, including participatory research and extension activities. NGOs realized that a radical shift, away from shorter-term alleviation of hunger and suffering towards longer-term reduction of poverty and inequity, was absolutely essential. In addition to the historic transformation of NGOs from relief to development, other NGOs have emerged in recent years with a primary mandate focused on long-term agricultural development.

The NGOs in Zimbabwe and Malawi, selected for examination in this study, were found to be involved in a variety of agricultural activities. Ventures include food production, processing, storage, utilization, germ-plasm conservation and utilization, produce marketing, horticulture, oil extraction, cash crop production (coffee, cotton, tobacco), poultry, aquaculture, dairy production, credit, water program, off-farm income generation, and training in areas of leadership, facilitation, and management. Few NGOs are involved in all of these activities and most have a subset that fits their individual mandate and program objectives.

Participatory Features: Facilitation & Networks

It was discovered that the NGOs studied in Zimbabwe and Malawi are typically capable of providing many important agricultural services. Their approach was different from traditional research and extension agencies. They tend to favor a more participatory approach to programming and they operate through extensive grassroots networks that allow access to remote geographic areas and isolated groups of people. These two features make NGOs more effective in interfacing with resource poor farmers.
Facilitating the Participatory Approach

The participatory approach to agricultural development modelled by the selected NGOs is significantly different from the predominant technology transfer paradigm. The farmer is not viewed by NGOs as the "end recipient" of a top-down technology delivery process. Likewise, the NGO agricultural development worker is not characterized as a "conduit" for conveying information generated by institution-based scientists down to farmers.

Rather than formulating a pre-packaged prescription for farmer problems, the more effective NGOs are embracing a collaborative and jointly diagnostic process. Farmers, including those who are categorized as resource-poor, are regarded as valued partners with NGOs in the development process at all levels of intervention: need assessment, program planning, experimentation, technology development, program implementation, and evaluation. The partnership model entails giving considerable decision-making control over to the farmers, including the ability to influence the allocation of available resources.

Several NGOs in Zimbabwe are involved in participatory approaches to research and extension. The Organization of Rural Associations for Progress (ORAP), ENDA (Environment and Development Activities), and Selveira House were selected as case studies. Each of these three NGOs are engaged in participatory forms of research in several areas of agriculture. Research, involving such areas as the identification and preservation of indigenous varieties of seeds, is conducted through their organizational networks in Zimbabwe. One Zimbabwe NGO, ENDA, has made research an integral part of all projects. Each ENDA division is actively engaged in a continuous cycle of research and monitoring.

In many NGOs there is also a strong linkage between extension and research, again in contrast to the usual formal system of operating them as separate services. The potential advantage of links are well known: reducing the number of stages between the farmer and the technology being developed, improve in the possibilities for communication between farmers and those serving them and increasing the emphasis on adaptive or applied research.... On the balance it appears that NGOs are in a good position to employ participatory approaches in agricultural research. However much appears to depend on their long-term aims particularly with respect to empowerment of their collaborating GROs (grass roots organizations) (Wellard, et al., 1990: 8-9).

An operating philosophy characteristic of NGOs was revealed in an interview with ORAP's administrator Livion Njini. He said "Projects are not ORAP's objective, they are only a means. People have to discuss and arrive at their own solutions."

"Self directed development is not easy, for our people had been conditioned to believe that they are not able to think for themselves and were not allowed to take part in decisions and discussions about their lives. Therefore, unless they take control of their development process, in terms of how and who should do it, development cannot take place.... Development is a process of articulation and participation. This is the starting point, and the end product of development is the persons themselves; knowing what they want and act to get it. ORAP staff do not determine what the people should do but help to formulate their wishes into positive action.... ORAP gives people a chance to discuss their development. It should not be an outsider to decide for them but for the outsider to assist with the expertise required of ORAP members (ORAP, n.d.)."

Often NGOs will utilize local practitioners from the village to facilitate participatory research. For example, Selveira House selects "Area Field
Promoters”. When farmer groups are ready, neighboring groups join together in an informal co-operative and appoint a volunteer secretary ("Area Field Promoter"). Upon election, the Area Field Promoter's expenses are paid by Selveira House. (Röling: 1988) Selection of local village practitioners is also encouraged in the ENDA model of development. Village-based researchers live in villages and collect data on issues, ranging from wood-fuel to biomass. In addition to the village based researcher, ENDA also employs Community Workers who assist in organizing village meetings and do extension activities with farmers. Similarly to the Selveira House and ENDA model, ORAP employs field workers chosen by their local communities.

They (field workers) are nominated by their local communities, umbrellas, and associations and then a special meeting of people from all three levels is called, and each candidate presents him/herself. They then leave the room and the participants ... discuss the relative merits of the candidates and choose one of them to be their field worker. They are chosen on the basis of "their willingness to serve other people, how they carry themselves with other people, their respect for other people ...” They were obviously considered proven leaders by the communities well before their election (ORAP, n.d.).

Utilizing Grassroots Networks & Linkages

Many effective NGOs perform their work through a web of local organizations, commonly referred to as networks. For NGOs without a pre-established web of grassroots organizations, networks are sometimes created through the networking of individual projects.

Networks may reach only a selected geographic region or may be so expansive that they extend throughout an entire country. Even though networks have highly variable characteristics, the ones most used by NGOs have some identifiably common features. Most networks involve linkages with, and between, local organizations. Some NGOs connect with pre-existing local organizations, but often formation of new local organizations is necessary. For example, local agricultural cooperatives, self-help groups, village committees, or irrigation associations may be born out of the activity of an NGO.

It is linkage with, and between, local organizations that is the fundamental characteristic allowing effective NGOs to make a difference in the lives of resource poor farmers. In the process of cultivating local organizational linkages, NGOs can also link with government research and extension organizations, universities, and other organizations that are not easily accessible to members of local organizations. Examples of NGO activities in Zimbabwe and Malawi succinctly illustrate some unique networking features.

The Christian Service Committee (CSC) maintains the largest network of resource poor farmers in Malawi. The CSC is an indigenous NGO that was ecumenically organized in 1968 when the Protestant and Catholic Churches of Malawi joined forces to serve the rural poor. The CSC represents an expansive network of synods, dioceses, churches, and prayer houses throughout Malawi. As a grassroots NGO, the CSC has responsive networks that provide avenues for the active participation of rural resource-poor farmers.

Although government research and extension organizations almost invariably find it difficult to get the desired participation by resource poor farmers, some NGOs are able to attract a significantly higher level of interest. An example from Malawi illustrates this distinction.

The Malawi government has investment considerable resources to implement numerous studies targeting the needs of resource-poor farmers. Typically, research teams solicit survey information from farmers in their fields. This type of assessment is expensive and often yields limited results that are relevant to the resource-poor farmer's situation.
The CSC measured farmer needs by sending a simple survey questionnaire through their farmer network. The response was unexpected. Documents from farmers and groups of farmers (often written by a literate relative or acquaintance), describing their farming problems and potential solutions, were received from throughout Malawi. Even though some may not be satisfied with their scientific rigor, the CSC example illustrates the power of an NGO network to interface with resource poor farmers.

In Zimbabwe, two NGOs developed complex networks involving local community organizations and resource-poor farmers. Fourteen associations were formed from more than 300 local level groups by ORAP. Several village groups evolved from existing women’s clubs (ORAP, n.d.). These associations undertake development activities with facilitation by ORAP.

Selveira House has created a networked system through the mobilization of farmer groups in affiliated churches. As these farmer groups developed, they "... came to be formed around 'natural' affinities of friendship, neighborhood, clan or family rather than religious affiliation, and appointed a committee of its best farmers who arranged the loan, bulk ordering and marketing (Röling: 1988: 159)." These farmer groups often, on their own initiation, formed into cooperatives. Selveira House has been able to effectively offer training, field days, and competitions through the cooperative structure.

Proactive Features: The Intermediary

Unlike public sector extension establishments, the NGOs studied were more proactive in initiating interactions with farmers. Instead of just promoting adoption of new technologies delivered by the research establishment, NGOs functioned more as intermediaries and advocates for farmers. Rather than visualizing the farmer as an end-user, NGOs treated farmers as collaborators in the development learning process. Farmers were also considered to be partners in the development and refinement of agricultural technology, information, and policy.

Zimbabwe NGOs have demonstrated leadership in several areas of national agricultural technology and policy. Both ENDA and ORAP members have influenced decision-making in the Ministry of Environment and Tourism and the Ministry of Lands, Agriculture and Rural Resettlement. For example, recent Zimbabwe government policy favored the use of high yield seed varieties. Members of ENDA documented the value of indigenous varieties, presented the results to government officials, and were able to influence policy decisions.

ENDA has also demonstrated a proactive stance by facilitating formation of a seeds network involving selected NGOs in participatory research, collection, and distribution of indigenous varieties of germ plasm. The seeds network manages its own seed bank and has been integral in demonstrating the value of many of the indigenous varieties.

Conclusions

An innovative model of agricultural development is steadily evolving and maturing among NGOs in Zimbabwe and Malawi. The NGO model is complex, but has at least two definable characteristics. It is participatory at the grassroots level and proactive at the institutional level.

The NGO development model is clearly different from the dominant agricultural extension, or technology-transfer, model. Table 1 is intended to represent several perspectives and their respective roles as they are overlaid on each of the two development paradigms. The real world is rarely so starkly dichotomous as it appears when represented in comparative tables as the one below. Information in the table will be instructive if it is remembered that each paradigm lists generalizations that fall at opposite ends of a gradual continuum.

The approach of a change agent, acting as an intermediary, can be radically different.
depending on an organization's structure and philosophy. If an organization is predominantly oriented to a technology transfer paradigm, a change agent's role will be reactive. Actions of the change agent will be primarily influenced by the introduction and promotion of new technologies. The job of the change agent is to eagerly (or not so eagerly) transport a designated technology (or technology package) to farmers for their rapid adoption. If, on the other hand, an organization's paradigm is oriented toward service of farmer needs, and participation in the working of local organizations, the change agent's role will be more interactive. Efforts of the change agent will, especially during early stages of program development, be focused on cultivation of a co-learning partnership with farmers. In the process of facilitating collaboration with farmers, a change agent will assist local organizations with research and assessments. The change agent will support farmers' learning by enhancing their capabilities to identify and acquire knowledge and technologies (usually various combinations of local and introduced technologies) that address locally identified needs.

Because NGOs adopt a participatory-proactive model they become effective brokers, often mediating (or bridging) between public sector agricultural institutions and their farmer members. The bridging feature puts NGOs in a unique position to feed-back the necessary knowledge and technology to research scientists. Feedback is essential for researchers, especially those operating at locations where they have little direct interaction with farmers.

The Need for Greater Collaboration

Although it might appear impractical for public sector research and extension agencies to adopt a participatory-proactive model, it is possible for the public sector workers to more diligently listen to the issues and needs expressed by the NGO community. "The area of NGO-Government relationships is decisive for the strategic development and impact of NGOs. To achieve wider relevance, and to gain replicability for their initiatives on large scales,

NGOs must influence government bodies, local and national (Cernea, 1988)."

It is through collaboration, rather than competition, that both the public sector and the NGO community can work towards more responsive development models. As proactive brokers of agricultural technologies, NGOs enhance change agent integrity and help build trust with farmers, thus establishing the likelihood of more interactive extension opportunities.
Table 1

The Perspectives of the Development Paradigms

<table>
<thead>
<tr>
<th>Development Paradigms</th>
<th>Perspective Roles</th>
<th>Technology-Transfer</th>
<th>Participatory-Proactive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmer</td>
<td>Recipient</td>
<td>Partner</td>
</tr>
<tr>
<td>Change Agent</td>
<td>Conduit</td>
<td>Facilitator</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>Reactive/</td>
<td>Interactive/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selling</td>
<td>Brokering</td>
<td></td>
</tr>
<tr>
<td>Researcher</td>
<td>On-station (unless adoption problem)</td>
<td>On-farm (unless responding to farmer as co-learner)</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>Top Thinks; Local Acts</td>
<td>Thinking and Acting at all Levels</td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>Top-down</td>
<td>Shared</td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>Prescription</td>
<td>Participation</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Summative</td>
<td>Formative</td>
<td>Farmer Satisfaction</td>
</tr>
<tr>
<td></td>
<td>Cost Reduction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is evident that NGOs have almost all the qualities that are associated with the ideal development strategy as defined by hundreds of international conferences concerned with development in the Third World. The point we are making here is not only that NGOs are much more efficient and effective than governments, a point that everybody takes for granted, but the fact that governments stand to benefit tremendously by allowing private and voluntary efforts to take root in society and thereby provide effective entry points for public sector inputs (Hyden, 1983).

The advantage of collaboration was recently cited by a public sector extension practitioner from Zimbabwe. A donor had approached the government extension agency with an offer of funds for an agricultural project. However, some government workers practitioners familiar with the local situation contended that the donor should channel funds to a local NGO instead. "If the donor gave the money to us (government agency), it would have been tied-up in our bureaucracy for years. However, if the donor gives the money to a local NGO, they can begin to implement the program tomorrow, and we can work collaboratively with them by sharing our expertise."
Collaboration combines the enhanced program flexibility and responsiveness of the NGO community with expertise of public sector institutions. In addition to the benefits from collaboration, NGOs offer shared vision, inspired commitment, and dynamic leadership to complement the public agencies. Adding NGO practitioners to public sector policy making boards and committees will enhance representation and dialogue. As previously indicated, the pay-off for public sector policy makers who listen to NGO leaders is extremely high. Responsive agricultural policies and practices can only be implemented if leaders listen and learn from those who represent the needs of resource poor farmers. As intermediaries, NGOs serve as forceful advocates for change at the grassroots level. They often bridge the huge gap between public sector research/extension and the resource-poor farmer.

The important contribution of NGOs in agricultural research and extension is not well documented. As a result, many public sector extension practitioners underestimate the capability and capacity of NGOs in agricultural development. Unfortunately, the existing literature on NGO extension fails to adequately demonstrate their potential for proactive development, participatory research, and networking. This study analyzed selected NGOs in Zimbabwe and Malawi, and discuss an emerging model for increased collaboration with public agencies.

It is commonly known that NGOs contribute to organizational capacity by stimulating action at the local level. They are effective mobilizers of people through voluntary groups for self-reliance and self-development (Cernea, 1988). In contrast to the predominant technology-transfer paradigm of development, NGOs do not overly focus on supplying technological, informational, and financial inducements development. Rather, NGOs seek to partner with people, create a co-learning capacity, and cultivate a local environment that might stimulate development through empowerment that accompanies local ownership. Among Zimbabwe's Shona-speaking NGO community, the phenomenon of self-development is called "zenzele" (or "self-reliance").

References


IMPACT OF THE REGIONAL CENTERS ON FACULTY AND STUDENTS AT THE COLEGIO de POSTGRADUADOS, MEXICO

Anibal Quispe Limaylla
Colegio de Postgraduados, Chapingo
Mexico 56230, MEXICO

Julia A. Gamon, Associate Professor
W. Wade Miller, Professor
Agricultural Education and Studies
Iowa State University

Abstract

This descriptive study was designed to assess the educational impact of the regional centers on the research, teaching and extension functions of the Colegio de Postgraduados of Mexico. Data were collected by hand-delivered questionnaires and analyzed by descriptive statistics, t-tests, one-way analysis of variance and Pearson's correlation. According to the findings, campus faculty and students participated infrequently in the regional centers. Campus faculty perceived that they did not improve their professional competencies very much as a result of their activities in the regional centers, but regional center faculty felt strongly that they gained knowledge about the regions and practical experiences. Lack of communication among faculty members and lack of institutional support were the main reasons for low participation. There were no significant relationships between faculty perception of basic agricultural education principles and their degree of participation in the regional centers. Students perceived that the Colegio de Postgraduados was following educational principles.

Introduction

For decades, institutions of higher education in Latin America have been criticized because they have not responded to the needs of agricultural development. Main concerns have been: curricula that were incompatible with agricultural education objectives, lack of linkages between educational institutions and rural communities, and little integration among research, teaching, and extension (Olcese, 1965; Pino, 1974; ALEAS, 1985; FAO & ALEAS, 1991). Conscious of those problems, the Colegio de Postgraduados (CP) implemented creative programs to improve its educational functions. This graduate college, in the period between 1976 and 1986, created four regional centers with the purpose of linking its educational function with the agricultural and rural problems of the regions. Located in four different ecological and socioeconomic regions, the regional centers were established to be natural laboratories in which the institution had functional responsibilities for conducting research, teaching students, and extending services to the farmers. The regional centers would make it possible to incorporate new conceptual, theoretical, and methodological elements into the curricula (Casas et al., 1977). In spite of some signs of progress, the community of CP has had increasing concerns about the role of the regional centers in relation to the objectives of the institution.

Purpose and Objectives

The purpose of the study was to assess the impact of the regional centers for research, teaching, and extension on the educational function of the Colegio de Postgraduados, which is one of the principal higher agricultural education institutions of Mexico that prepares students at the master and doctoral levels.
Objectives of the study were:

1. To describe the demographics of the students and faculty.
2. To assess the participation of campus faculty in the regional centers, the impact of participation and the reasons for nonparticipation.
3. To assess students' perceptions of their participation in the regional centers and the educational function of the Colegio de Postgraduados.
4. To compare faculty and students' perceptions of the educational function of CP with their participation in the regional centers.

What has been the impact of the regional centers on the educational functions of the institution? Specifically, how have the activities of research, teaching, and extension, carried out in the regional centers by faculty members, affected the education of students?

Methods

The design used for this study was the descriptive survey method. Data were obtained from campus faculty (70), regional-center faculty (40), and students (76) of the Colegio de Postgraduados. The samples were selected by the stratified random sampling technique. Three different versions of questionnaires were designed to collect information. They were hand-delivered to the subjects. Also, direct observation, informal interviews face to face, and review of official documents and records were employed. Descriptive statistics, t-tests, one-way analysis of variance, factor analysis, and Pearson's correlation were used to analyze data. The instrument was developed based on an extensive literature review and a review by the researcher's doctoral committee. The reliabilities of the instrument were .96, .75 and .92 for campus faculty, regional center faculty and student questionnaires, respectively. The alpha level of significance was set a priori at .05.

Results and Conclusions

Findings are arranged under the following headings: 1) Demographic description of the respondents, 2) Participation of campus faculty in the regional centers, 3) Improvement of academic performance as a result of faculty members' activities in regional centers, 4) Reasons for low participation of campus faculty in the regional centers, 5) Participation of students in the regional centers, 6) The educational performance in the Colegio de Postgraduados as perceived by students, and 7) Relationship between faculty members' and students' perceptions regarding basic principles and concepts of agricultural education and their degree of participation in the regional centers.

Demographic description of the respondents

Participants in the survey were predominantly male: 80.0% campus faculty; 92.5% regional center faculty; and 85.5% students. The average age was 40.7 years among campus faculty, 35.2 years among regional center faculty, and 31.1 years among students. In both campus and regional-center faculty, the group holding a master's degree was larger than those holding a bachelor's and doctorate (51.4% and 82.5%). Almost half (47.1%) of the campus faculty held a doctorate, compared with 15.5% of the regional-center faculty. The distribution of faculty members by academic rank was not the same for faculty from campus and regional centers. The largest group among campus faculty (45.7%) consisted of Professors and Associate Professors, but Assistant Professor was the largest group among regional center faculty (47.5%). When considering time spent on teaching, research and extension activities, the largest percentage of campus faculty (50.2%) and regional-center faculty (50.3%) spent time on research. This result was different from that found by Macias-Lopez (1990) in his study of professors and graduate students of Mexico, Central America, and Caribbean agricultural education institutions. In that study, teaching was the activity in which faculty members spent the most time (41.9%).
Participation of campus faculty in the regional centers

Campus faculty were asked to rate five levels of frequency of participation in the regional centers. The scale utilized was: 1= never to 5= very frequently. Findings indicated that participation of campus faculty in the regional centers was infrequent (M=1.81; SD=1.03). To find differences of the degree of participation between or among groups, t-test and one-way ANOVA were used. Groups were compared by age, academic degree, and academic rank. When groups were compared by age (from 25 to 34, from 35 to 44, and 45 or more), and by academic rank (Professor or Associate Professor, Assistant Professor, and Instructor or Research Assistant), a one-way ANOVA showed a highly significant difference (p=0.001) among groups in both cases. The interpretation of the Scheffe' post-hoc analysis indicated that the groups who were 25 to 34 years old, and those in the rank of Assistant Professor, and Instructor or Research Assistant, participated less frequently than those older than 34 years of age, and those in Professor or Associate Professor ranks. When groups were compared by academic degree (master's and doctorate), a t-test analysis indicated a highly significant difference (p=0.001) existed between the two groups. The group holding master's degrees participated less frequently than those holding doctorates.

Improvement of Academic Performance of Faculty Members as a Result of their Activities in the Regional Centers

This study was designed to assess the impact that participation in the regional centers had on faculty members. The assumption was that faculty and students might gain practical experience and knowledge and change their attitudes, forms of thinking and acting as a result of their participation in planned activities, as is explained in Leontiev's theory of action (Zuber, 1991). The action may refer to any aspect of learning, teaching, or other professional activities. Whether the action is practical (exterior) or mental (interior), its aim is to be reflected, refracted, or transformed in the subject's consciousness, together with the product of action (the object), which is also to be reproduced in the subject's consciousness (Figure 1).

To assess their perception of their academic improvement as a result of their activities in the regional centers, campus and regional-center faculty were asked to rate nine statements about knowledge, experience, and changes in their attitudes as a result of their activities in the regional centers. In general the campus faculty members' perceptions of acquired knowledge, experience, or changed attitudes as a result of their participation in the regional centers was slight. The three items rated most highly were close to the midpoint of the four-point scale. They were "practical experiences" (M=2.59), and "understanding of agricultural problems of the region" (M=2.57, SD=1.15), and "understanding of ecological problems of the region" (M=2.49, SD=1.06). On the contrary, regional-center faculty felt strongly that they had improved as a result of their activities in the regional centers. All the nine statements were highly scored; "gained practical experiences" and "gained
understanding of agricultural problems of the region" had the highest average scores (M=3.70, SD=0.61 and M=3.6, SD=0.54). To find differences between campus and regional-center faculty, t-tests were used (Table 1). The results revealed highly significant (p=0.01) differences between the two groups for the nine statements.

In addition, campus faculty were asked to rate nine statements in regard to the importance of their gained experiences and knowledge in the regional centers toward improving curriculum and other academic aspects. To rate each statement, the scale of 1=not useful to 4=very useful was utilized. In general, campus faculty felt that their gained experiences and knowledge in the regional centers were slightly useful for improving curriculum and other academic aspects. They felt that their acquired experience and knowledge in the regional centers were useful mostly to "improve research methods" (M=2.65, SD=1.20) and "prioritize research areas" (M=2.59, SD=1.22). Large standard deviations indicated a wide range of perceptions by respondents.

Faculty from regional centers were also asked about the frequency of their participation on campus by type of activity. The scale of 1=never to 5=very frequently was used. The results indicated that regional center faculty rarely participated in academic activities on campus (teaching: M=1.87, SD=1.14; research: M=1.85, SD=1.18; and other activities: M=2.27, SD=1.48).

Reasons of Low Participation of Campus Faculty in Regional Centers and Faculty from Regional Centers on Campus

Because of anticipated low participation of campus faculty in regional centers and faculty from regional centers on campus, faculty members were asked to rate seven statements of potential reasons for their lack of participation. They were asked to complete any additional reasons for their lack of participation by answering an open-ended question. To rate the statements, the scale of 1=completely disagree to 7=completely agree.

Participation of Regional-Center Faculty in Academic Activities on Campus
Table 1.

Means, standard deviations, t-values, and probabilities of scores on the perception of campus and regional center faculty regarding their professional improvement as a result of their activities in the regional centers

<table>
<thead>
<tr>
<th>Statements</th>
<th>Variables</th>
<th>Mean</th>
<th>S.D.</th>
<th>t-values</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gained practical experience</td>
<td>CF</td>
<td>2.58</td>
<td>1.19</td>
<td>29.09</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.70</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gained understanding of agricultural problems of the region</td>
<td>CF</td>
<td>2.57</td>
<td>1.15</td>
<td>27.17</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.60</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gained methodological experiences to solve problems</td>
<td>CF</td>
<td>2.25</td>
<td>1.13</td>
<td>35.50</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.47</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed attitudes</td>
<td>CF</td>
<td>2.21</td>
<td>1.12</td>
<td>27.93</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.37</td>
<td>0.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gained understanding of socio-economic problems of the region</td>
<td>CF</td>
<td>2.35</td>
<td>1.16</td>
<td>23.40</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.35</td>
<td>0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gained understanding of ecological problems of the region</td>
<td>CF</td>
<td>2.49</td>
<td>1.06</td>
<td>18.41</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.32</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed forms of thinking</td>
<td>CF</td>
<td>2.19</td>
<td>1.09</td>
<td>16.69</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.10</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed attitudes toward campesinos</td>
<td>CF</td>
<td>1.92</td>
<td>1.04</td>
<td>27.40</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.02</td>
<td>0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed forms of acting</td>
<td>CF</td>
<td>1.96</td>
<td>0.97</td>
<td>23.29</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>2.95</td>
<td>0.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scale: 1 (low) to 4 (high)
CF = campus faculty, N = 51
RCF = regional center faculty, N = 40
**Significant at p. = 0.001
was utilized. Findings indicated that although faculty of both campus and regional centers did not completely agree with the suggested reasons for their low participation, they agreed with the following statements: "lack of communication among campus and regional-center faculty," "lack of institutional support," and "lack of institutional sources."

**Participation of Students in the Regional Centers**

The regional centers were a possible means for professors and students to interact, learn, and gain cognitive and affective knowledge. Based on that assumption, students were asked about the frequency of their participation and their means for becoming familiar with the regional centers. The scale of 1=never to 5=very frequently was used. Findings indicated that students rarely participated in the regional centers (M=1.51, SD=0.55). To determine whether or not familiarity took place as part of the planned process of teaching-learning, students were asked about the means by which they became familiar with the regional centers. They were asked to respond to five statements of probable answers. Frequencies and percentages were used for the analysis. Findings indicated that students became familiar with the regional centers mostly by "other means" (30.3%), such as visiting the region for a particular interest, working in the region, or through friends and peers. Student familiarity with the regional centers was most often not a result of a planned teaching-learning process by the institution.

**Educational Performance in the Colegio de Postgraduados (CP) as Perceived by Students**

Based on the definition of regional centers, it was assumed that the educational function of the CP would be more effective if faculty members and students participated in the regional centers. Curricula, programs, and teaching methods would be improved as a result of the knowledge and experience gained. To what extent was this happening in the CP? To assess educational function in the CP, students were asked to rate 30 statements regarding principles and educational needs and goals that should be met and applied by in the institution on a seven-point scale ranging from 1=strongly disagree to 7=strongly agree. The statements were grouped logically into six groups of common content: 1) teaching and learning, 2) content of the courses, 3) plan of study, 4) competency of professors and instructors, 5) academic and social environment in the institution, and 6) competency of graduates. According to findings, students agreed in general that the principles and other desired educational aspects were met or applied in the CP. Students agreed with the following statements: "the instructors are qualified professionals" (M=6.05, SD=0.98), "the graduates have solid and balanced preparation" (M=5.72, SD=1.05), and the instructors are supportive" (M=5.67, SD=1.37). Students slightly agreed with "the institutional environment invites students to participate in academic and social activities" (M=4.67, SD=1.66), and "the institutional environment is supported by strong leadership" (M =4.47, SD=1.63). Students seemed to perceive that educational principles and desired educational aspects were met in the CP. However, participation of faculty members in the regional centers was low. The reviewed literature (Hernandez, 1988 and Teliz, 1988) on educational aspects of the CP suggests that deeper and more detailed studies about educational performance are required.

**Perceptions of Faculty Members and Students Regarding Basic Principles and Concepts of Agricultural Education, and Relationships Among those Perceptions and the Degree of Faculty and Student Participation in the Regional Centers**

To what extent did faculty members and students agree or disagree with the basic principles and concepts of agricultural education? And how were their perceptions of those principles and concepts related to their degree of participation in the regional centers? A literature review provided the basis for 25 statements regarding: the integration of teaching, research, and extension; the integration of theory and practice in the process of teaching-learning; agricultural professional competency;
the role of agricultural education institutions; professional training in developing countries; the importance of small scale agricultural producers; and the definition of regional centers. Respondents were asked to rate each statement on a scale of 1=completely disagree, to 7=completely agree. Results show that, in general terms, respondents agreed with the 25 statements. Respondents completely agreed with the following statements: "teaching-learning process must be carried out through the integration of theory and practice" (M=6.67, SD=0.55), and "agricultural universities should contribute importantly to the discovery of future agricultural practices that are socially desirable, culturally feasible, and ethical defensible" (M=6.50, SD=0.69). To find out if campus faculty's perceptions of those basic principles and concepts were related to their degree of participation in the regional centers, analyses of correlation were made. The results indicated that no relationships existed among campus faculty's perceptions of the basic principles and concepts of agricultural education, and their degree of participation in the regional centers. This does not mean, however, that academic activities of faculty members were not related to their basic beliefs and values about agricultural education. Faculty participation in the regional centers could be more closely related to external factors, such as the organizational structure of the institution, the administrative system, and social and economic factors.

Conclusion

Findings of this study lead to the conclusion that the educational potentials of the regional centers were not being fully utilized. The study found that participation of campus faculty in the regional centers was infrequent. Those who participated in the regional centers perceived that they did not improve their professional competency very much as a result of their activities in the regional centers. On the contrary, regional center faculty felt strongly that as a result of their activities in the regional centers they gained knowledge and experience, and underwent changes in their attitudes and forms of thinking and acting. However, faculty from regional centers perceived that their participation in academic activities on campus was infrequent. The main reasons for infrequent participation of campus faculty in regional centers and faculty from regional centers on campus were: lack of communication among faculty members, lack of institutional support, and organizational structures of the institution. Participation of students in the regional centers was also infrequent. Students became familiar with the regional centers not as a result of the planned academic activities of the institution but by other means, such as personal interest, previous work in the region, and through peers. In spite of the infrequent participation of campus faculty and students in the regional centers, students perceived that educational principles and desired educational aspects were met in the Colegio de Postgraduados. Also, faculty members and students agreed with most of the basic principles and concepts of agricultural education. Yet, no relationships existed among campus faculty members' and students' perceptions of the basic principles and concepts of agricultural education, and their degree of participation in the regional centers.

Recommendations

To be more effective in their function and role, educational institutions should become aware of the processes, context, results and potentials of their programs. For that, institutions should continuously assess and evaluate their programs. This is even more urgent in a time of drastic changes in political and economic concerns, as in Mexico. Agricultural education institutions, to respond effectively to the needs of agricultural and rural development, need to revise their institutional components, including their programs.

Implications

The concept of regional centers as exemplified by the Colegio de Postgraduados may serve as model for agricultural education institutions in Mexico and in Latin America. It has the potential for overcoming the weaknesses of conventional educational models practiced by
many institutions where the teaching-learning process has been carried out mostly in classrooms and laboratories, with little or no interaction with farmers and their environment. As a consequence, national and international institutions have urged the adoption or creation of linkages between educational institutions and rural communities for their mutual benefit, a situation in which professors and students work together and learn from each other.

References


James E. Diamond, Assistant Professor Emeritus  
Department of Agricultural and Extension Education  
Pennsylvania State University  

Abstract  
Swaziland's Ministry of Agriculture officials in 1984 recognized that the old British extension system was not adequately addressing the needs of farmers. After three years of endeavors with a new Train and Visit Extension System officials concluded that it needed to be modified to ameliorate Swaziland's agriculture. They modified the T & V Extension System to enable their extension staff to develop extension plans to implement programs aimed at the expressed needs of rural people, as opposed to just delivering untimely messages. At this writing, the Swaziland's Modified T&V Extension has succeeded in enabling extension field officers to develop local extension education programs, and farmers to have greater access to well trained extension field officers. A team from The Pennsylvania State University and Tennessee State University helped bring about those changes through the Swaziland Cropping Systems Research and Extension Training Project (CSRET).

Introduction  
Between 1982 and 1991, the agricultural extension system in Swaziland--a country located between the Republic of South Africa and Mozambique--has experienced much change. During this period, the Ministry of Agriculture and Cooperatives recognized the benefit of a strong agricultural industry in Swaziland and identified a need for an effective agricultural extension system for Swazi farmers. A team from The Pennsylvania State University and Tennessee State University helped bring about those changes through the Swaziland Cropping Systems Research and Extension Training Project (CSRET).

Extension in Swaziland  
First organized in 1930, the Swaziland Agricultural Extension Service has progressed from a colonial, British-dominated system, to a localized extension service staffed mostly by native Swazis (Trail, 1985). In 1969, funding from the World Bank, the United States Agency for International Development, and the United Kingdom enabled the government to organize portions of Swaziland into Rural Development Areas. The Rural Development Areas used the British style of agricultural extension.

Until 1984, the British style of agricultural extension was divided into sections. Each section in the Ministry of Agriculture had its own extension personnel. For example, the horticulture section had its extension field staff and the livestock section had its extension field staff, as did the fourteen other sections. Each field officer was a specialist in their respective section. The advantage of this system was that extension field officers focused only on the subject areas covered within their section. The disadvantage was that farmers had to have access to the appropriate extension person for a specific question or problem. Because of many constraints (i.e., transportation, communications, and area of expertise), only a few farmers truly had access to extension field officers.

Introduction to Train and Visit Extension System  
Ministry officials recognized the need for more farmers to have access to extension personnel. It was apparent that more and more farmers on Swazi Nation Land (land held in trust by the
king for the Swazi people) wanted increased contact with extension field officers for information, non-formal education programs and advice. To address this issue, Ministry officials, in collaboration with World Bank consultants, initiated a process that led to the reorganization of the extension service. After a review of the British style extension system in Swaziland, the World Bank consultants introduced the concepts of the Train and Visit (T&V) Extension System to Ministry officials. A study team from the Ministry steering committee traveled to Kenya to observe the T&V Extension System in place there. Upon their return from Kenya, the steering committee recommended that the T&V Extension System be adopted in Swaziland.

**T&V Extension System**

The T&V Extension System was developed in India during the second half of the 1970s (Cernea, 1983). Its organizational structure includes five levels: director of extension, district extension officers, sub-divisional extension officers, extension officers, and extension field officers (Rivera, 1986). In principle, this extension system is sufficiently flexible to be adapted to most types of farming. Cernea (1983) reports that "its aim is to improve the use of existing resources by concentrating initially on key improvements in major crops that can produce significantly better yields fairly quickly and cheaply."

The system was designed so local extension officers could quickly disseminate specific information to farmers through frequent visits to their farms. The T&V Extension System provides intensive education programs for extension field officers on timely agricultural practices and recommendations. Extension field officers were then expected to disseminate information on these practices and recommendations during the following two weeks. Cernea (1983) goes on to say that, "The central strategy of the T&V system is to concentrate effort. . . . The system functions by allocating precise responsibilities. . . and by concentrating on a few actions at a time. . . . Village Extension Workers visit small groups of 'contact' and other farmers at least once a fortnight to teach them three or four carefully chosen recommendations, or 'impact points,' about what to do over the next two weeks."

**Implementation**

Based upon the recommendations of the steering committee, the T&V Extension System was implemented in Swaziland beginning in September, 1985. All field officers who were specialists suddenly became generalists. A special twelve-week, in-service education program was sponsored by the Ministry to increase the officers' general agricultural knowledge base so they could effectively communicate with farmers and implement the T&V Extension System.

Typically, the extension officers in Swaziland spent two days each month meeting with subject matter specialists to obtain timely messages for farmers. The extension officers then met with their respective field officers one day every two weeks to give them the messages. The field officers then would conduct small group meetings with "contact" and "follower" farmers during the next eight days giving farmers the messages. This procedure was repeated each month, September through April.

The implementation of the T&V Extension System did cause an increase in the number of farmers having contact with field officers. However, as expected with any change process, implementation was resisted within the rank and file during its first year (October, 1985 - September, 1986).

**T&V Two Years Later**

Upon reviewing the status of Swaziland's T&V Extension System two years (1987) after implementation, it was found that the extension subject matter specialists, T&V coordinators, extension officers, and field officers expressed much frustration and confusion with the system. The morale of the staff as a whole was very low, leading to a number of extension officers resigning from the civil service or requesting a transfer to other ministries.
Issues That Evolved

Because the T&V Extension System was not fully accepted by the extension field staff, the system began to flounder in many ways. The staff were experiencing frustration because of these issues (Diamond, 1990).

Confusion. The extension field staff members were unclear about how the system was to function. Many were confused as to what their specific roles and responsibilities were.

Transportation. Field staff and subject matter specialists lacked transportation to attend meetings and visit homesteads; extension officers were not able to give proper supervision to field officers because of insufficient transport, communication, and commitment.

Numbers. Field staff indicated they had too many farmers under their jurisdiction. Some reported that they had 200 farmers while others reported they had as many as 750 farmers scattered throughout the countryside. It was difficult to visit more than four to six farmers per day on foot.

Political. The T&V Extension System required the use of contact farmers to serve as communication links between the extension field officer and other farmers. Local chiefs were concerned that the field officers were preempting the right of the chief to select the contact farmer. Some chiefs felt that it was their duty to select the contact farmers. In a number of cases where chiefs selected the contact farmers, they did not always select the innovators or early adopters.

Timing. Farmers were receiving untimely messages from the extension field officers. Often three to four weeks lapsed before the farmer received the messages.

Rigid System. Field officers complained they were only carriers of messages. The system was too rigid and did not allow flexibility for field officers to develop specific extension education programs based on the perceived needs of local farmers.

Changed Roles. Field officers were insecure in their roles as agricultural extension generalists. Having been specialists, the field officers feared humiliation if farmers asked questions they could not answer or if asked to solve problems in domains where they had little or no education or experience.

Communication. Because of the number of times messages were relayed through the system, the information was often distorted by the time it reached the farmers. Subject matter specialists would give oral messages to the extension officers, who relayed the messages to the field officers, who would then relay the messages to the farmers.

Planning. Little planning was done by subject matter specialists to prepare the monthly messages before being released to field officers. Messages were redundant or developed on the “gut feeling” or bias of a subject matter specialist, with little or no attention given to feedback from farmers or field staff.

Technology Transfer. Research officers did not offer much research-based information or appropriate technology to be given to farmers. They argued that by not knowing what was going to be discussed prior to the meetings, they were not prepared to offer any input.

Credibility. Farmers lost confidence in the field officers. If a field officer's previous specialty was livestock and a farmer asked why his tomato plants were turning black, the field officer would be reluctant to give an answer because of not being familiar with vegetable diseases and having little experience in vegetable production.

Irrelevance. Farmers quit attending contact farmer meetings. A farmer would take a morning off from his daily chores and walk some distance to the meeting, where the extension field officer would pass on the monthly messages. The messages, for example, would be on what varieties of maize to select, how to select a fish pond site, and how to prepare the seed bed for tobacco plants. The
farmer would walk back to the homestead saying to himself, "I already have my maize planted and now I'm told what maize variety to select. I don't want to build a fish pond, and I can't grow tobacco because it's too cold here in the high veld." The extension field staff were mandated to give all the messages to farmers, regardless of their ecological zone or type of enterprise. When the farmers found out what these meetings were like, they simply quit attending.

**Modification**

In early June, 1988, officials in the Ministry of Agriculture and Cooperatives recognized there were serious problems with institutionalizing the T&V Extension System. It had nearly collapsed during its third year. A Swazi research officer who specialized in rural sociology was commissioned to do a study to assess the system. In November, 1988, after collecting the data and compiling the results, the findings were submitted to the Ministry officials. The officials met to discuss the results of the study and after much deliberation, they made the decision to modify the T&V Extension System.

On December 15, 1988 on behalf of the Minister of Agriculture, the Principal Secretary mailed a letter to all extension personnel in Swaziland announcing and explaining the modification of the T&V Extension System. In essence, the letter said that between January 1 and March 30, 1989, the extension field officers were required to break their assigned areas into three "units." A suggested schedule of visits was included. A bimonthly meeting of the senior agricultural officers, agricultural officers, senior extension officers, research officers, and subject matter specialists was scheduled to discuss extension program progress and needs. In addition, three days of in-service education were to be conducted quarterly for all extension field staff.

The T&V Extension System in its purist form simply did not function as intended within the structure of Swaziland's rural society, and to some extent, the administrative structure of the Ministry. The modification virtually eliminated the intended functions of the T&V Extension System. It eliminated the exercise of developing and carrying monthly messages to the farmers. Subject matter specialists and research officers were no longer required to meet on a monthly basis to generate messages. Field officers no longer had to meet fortnightly to receive messages to be relayed to farmers.

The advantage of the modified T&V Extension System is that it offers an administrative structure where the four regional extension staffs can plan, develop, implement, and evaluate extension education programs based upon the farmers' needs. With this modification, the field officers now have the flexibility to address the farmers expressed needs by planning small group meetings, doing demonstrations, scheduling field days, visiting homesteads, conducting field trials, and engaging in other methods of disseminating information.

**Planning Process**

After the Ministry implemented the modified T&V Extension System during 1989, the next logical step was to develop an annual planning process for a regional and national agricultural extension education program. While the modified extension system was being implemented, the CSRET Project team with the assistance of consultants, began the long and tedious process of advising and guiding Ministry officials in developing and executing a bottom-up extension program planning process within a traditional top-down governmental administrative system.

Following many meetings, the Ministry officials developed and adopted the following four step agricultural extension planning process: (1) extension field officers meet with farmers within their respective units to identify and determine the issues that can be addressed through extension education programs; (2) extension officers identify their common subsection needs; (3) senior extension staff identify and prioritize the common subsection needs within their region (these collective needs then evolve into regional agricultural extension plan); and (4) the regional plans collectively become the national agricultural extension plan.
Each regional extension plan includes these components: Goal, Priority, Situation Analysis, Objectives, Extension Activities, Executing Personnel, Time Table, Activity Dates, Venue and Monitoring/Evaluation. The components give direction and “raison d’être” to the overall extension education program in Swaziland (Jansma, 1990).

**In-service Education**

In-service education for extension personnel in Swaziland is typically a three-day period each quarter. Extension personnel are released from their daily duties to attend a Ministry-sponsored program intended to enhance their capability to deliver agricultural information to farmers. However, according to Trail (1985), "... in-service education in the past was left to the individual subject matter specialists and their desire to provide it. The shortcoming was that it was not systematic and timely in most cases." During 1987, a systematic approach to extension in-service education was developed and implemented. The objective of the program was to give breadth and depth to a diversified knowledge base, to enable extension field officers to be more effective agricultural generalists.

Between April, 1987 to May, 1991, all extension field staff in Swaziland were offered an in-service education curriculum composed of 219 hours of instruction (Diamond, 1990). Topics were selected based upon the observations of subject matter specialists, research results, the Easter (1985) study, Trail (1985) report, and non-formal staff surveys. The implementation strategy focused on having the national subject matter specialists and research officers teaching their extension colleagues. The curriculum was aimed at broadening the knowledge base of the extension field officers while at the same time, increasing the perception of national subject matter specialists and research officers as the Swazi experts.

**Summary**

Swaziland's Ministry of Agriculture officials in 1984 recognized that the old British extension system was not adequately addressing the needs of farmers. They then looked at an alternative extension system in another country. In 1986 the officials decided to adopt a different extension system for Swaziland. After three years of endeavors with the different system, they recognized there were problems. The officials evaluated the problems and concluded that the T&V Extension System they adopted needed to be modified to ameliorate Swaziland's agriculture. They modified the Train and Visit Extension System to enable their extension staff to develop extension plans to implement programs aimed at the expressed needs of rural people, as opposed to just delivering untimely messages. At this writing, the Swaziland's Modified T&V Extension has succeeded in enabling extension field officers to develop local extension education programs, and farmers to have greater access to well trained extension field officers.

**Implications**

Based upon the issues that unfolded in Swaziland after the Train and Visit Extension System was introduced, it appears that the efforts of adopting an extension system from another country is not always successful. Donald C. Pickering of the World Bank (cited in Rivera, 1987) supports this conclusion by saying "... there is no single blueprint for the best extension approach. Each must be tailored to meet particular conditions. Blind adherence to a successful system elsewhere could be a recipe for disaster." Perhaps blind adherence to a successful system in Kenya was the recipe for disaster in Swaziland. Nevertheless, the success of Swaziland's "modified" Train and Visit Extension System can best be attributed to tailoring its extension system to amalgamate with the Swazi rural and national administrative structures.

There are basically five elements that have to be addressed if an extension system is to be successful according to Niels Roling from Wageningen Agricultural University (cited in Rivera, 1987). Those five elements are mobilization, organization, training, technical and resource support, and replication and
maintenance. In varying degrees, the modified extension system that unfolded in Swaziland included these five elements. However, as in many nations around the world, the degree of Swaziland's government technical and resource support has established financial parameters that constrains the scope of needed extension education programs.

**Recommendations**

Because of Swaziland's Ministry of Agriculture experiences in their endeavors to adopt an extension system that seemingly was successful in another country, and the implications of this scenario, the following recommendations were made: (1) when adopting or reorganizing an extension system, address the five elements described by Roling (cited in Rivera, 1987): mobilization, organization, training, technical and resource support, and replication and maintenance. (2) there is no single blueprint for the best extension approach and each must be tailored to meet particular domestic conditions. (3) an extension system should be flexible so modifications can be made to address the expressed and changing needs of people. (4) issues that affects extension staff performance should be promptly defused to reduce frustration and resignations. (5) expatriate change agents should involve all the appropriate indigenous people and enable them to have total ownership of a change process. (6) systematic in-service education programs should be an integral component of an extension system to improve the extension field staff capability to teach and advise farmers and to accurately disseminate research based information. (7) extension systems should have strong linkages with research institutions, universities, and other private and governmental agencies. (8) expatriates working with extension programs in other countries should be sensitive to cultural traits that bias counterparts, extension clientele, and curriculum content. (9) people at the local level should have major input in the extension program planning process.

**References**


MANUSCRIPT SUBMISSION GUIDELINES

Manuscripts are to be submitted to the Editor. Four double-spaced copies of manuscripts without author's name or affiliation are required. A separate title page with title, institution and complete address and telephone number for each author is required. A $25.00 submission fee is requested at the time of submission. A $10.00/page (actual pages in the journal) publication fee will be charged to the author(s) upon acceptance to the journal. Articles should be no longer than 12 double-spaced 12-pitch (11 point) pages (including references, and camera ready copies of tables and figures) with one-inch margins. The Journal will follow the standards set forth in the latest Publication Manual of the American Psychology Association (APA).

Manuscripts submitted for consideration should focus on international agricultural education and/or international extension education. Philosophical, theoretical and practical articles, as well as research articles, will be considered. All articles should relate to current issues, cite appropriate literature, and have direct implications for international agricultural and extension education. Manuscripts should not have been published or be under current consideration for publication by another journal.

Abstract: Each manuscript should be accompanied by an annotation not to exceed 150 words. The annotation should be a succinct description of the article.

Disks: Authors are encouraged to submit the final version of their articles on a computer disk. Word Perfect 5.1/5.2 is the preferred format. Use an ASCII (IBM compatible) format if a version of Word Perfect is not available.

AIAEE 1993/94 OFFICERS

Miley Gonzalez, President
Dept. of Agricultural and Extension Education
New Mexico State University
Box 30003
Department 3501
Las Cruces, NM  88003-0003

Bob Maxwell, President Elect
Dean, College of Agriculture
West Virginia University
Room 2056 Agricultural Sciences Building
P. O. Box 6108
Morgantown, WV  26506-6108

Frank Bobbitt, Past President
Dept. of Agricultural and Extension Education
410 Agriculture Hall
East Lansing, MI  48824-1039

Roger Steele, Secretary
Winrock International
Rural Route 3 Petit Jean Mtn.
Morrilton, AR  72110-9537

Curtis Norenberg, Board Director at Large
320 Vocational Technology Building
1954 Buford Avenue
University of Minnesota
St. Paul, MN  55101

Robert Martin, Newsletter Editor
Agricultural Education and Studies
217A Curtiss Hall
Iowa State University
Ames, IA  50011

Dennis Eaton, Graduate Student Representative
Agricultural and Extension Education
323 Agricultural Administration Building
The Pennsylvania State University
University Park, PA  16802-2601

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