

The Horticulturist's Role in International Agricultural Development Strategies: Introduction

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Horticulturists and ASHS Members from both developed and developing countries have had and will continue to have a significant influence on international agricultural development. Horticultural crop production is an extremely important aspect of the total agricultural and rural development in most countries. Horticultural crops, in spite of their importance, have been neglected in many developing countries in favor of agronomic grain crops, livestock, and industrialization. The neglect of fruit, vegetable, and ornamental development is serious in Africa and exists in many Asian and Latin American countries. Several African countries are experiencing a series of droughts that have caused mass starvation and human misery. Horticulturists are concerned with the quality of life and are involved with other scientists and colleagues in implementing freedom-from-hunger strategies in developing countries.

The opportunity to develop alternative horticultural crops in the Third World has not been fully explored or supported by our donor agencies. Many special opportunities to obtain funding and support for research and educational and rural development programs have been lost because of lack of horticultural visibility and the inability of horticulturists to respond rapidly to international agricultural issues and new directions. Increased attention must be given to strategy development that can provide international opportunities for research and education in fruit, vegetable, and ornamental programs. Horticultural crops have high market value—thus they are particularly important in developing countries for improvements to the balance of payments, better nutrition of the population, increased incomes to small farmers and retailers, and lower average food prices for consumers. Most horticultural crops are labor-intensive and require agricultural manufactured inputs such as equipment, fertilizers, pesticides, etc. Improved technology and management can increase production significantly.

Since the end of World War II, American ASHS Members have become more and more heavily involved in international agricultural programs, and it is certain horticulturist involvement will increase in the coming decades. Major universities, colleges, institutions,

agencies, and consultant firms will train many future horticulturists. The training of foreign horticulturists in developed countries and the transfer of agricultural technology to developing countries will expand. Developing countries eager to create more expertise and independence for their people are expected to provide new economic involvements in agriculture and other enterprises abroad.

The timing of this symposium on the horticulturist's role in international agricultural developmental strategies is appropriate, especially as it relates to new horticultural directions for international missions of teaching, research, and extension programs. It is important that we learn from past mistakes and successes.

The symposium objectives are to: a) bring together horticulturists concerned with strategy development from various international institutions and industries that have important international impact on horticultural development programs; b) facilitate the exchange of ideas and approaches to strategy development; c) describe the impact of our land-grant universities and colleges on agricultural technology transfer, alternative farming systems, and the training of production horticulturists and extension officers; d) identify critical policies and approaches to international agriculture; and e) review horticultural consultant opportunities and professional obligations that impact on and stimulate horticultural research and development in the Third World.

The 3 international agriculture working groups of the ASHS International Affairs Division are pleased to have sponsored this symposium, which included 5 outstanding participants from industry, donor agencies, and a university that provided their ideas, viewpoints, and concerns in this growing and important horticulture area. Participants in this symposium will present descriptive information, viewpoints, and ideas that should give guidance to and stimulate thoughts among international scientists who initiate or are actively involved in international agriculture development. Transfer of this information and agricultural technology is essential to achieving any meaningful agricultural development strategy.

Integrating International Agricultural Development Activities in Land-grant Universities and Colleges

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A recent World Bank report (8) classed over half (73 of 125) of the countries listed in its World Development Indicators as low-income or lower middle-income economies. Their per capita gross national products (GNP) are less than \$1700, with a range of \$80 to \$1630. Agriculture contributes from 24% to 75% of their national gross domestic products, and a majority of their citizens live in rural areas although they may not be directly involved in farming. The adult literacy rate for these countries ranges from 5% to 95%. The authors state that "Agricultural production is a key factor in the development of most countries. In the poorest countries, it is critical."

Most of these 73 countries are newly independent, having gained their sovereignty in the 40 years since World War II. Americans

should reflect on a statement that one of our founding fathers made on the subject of national dependence and international interdependence. In 1820, 44 years after our own Declaration of Independence, Thomas Jefferson said (14): "In an infant country such as ours, we must depend for improvement on the science of other countries, long established, possessing better means and more advanced than we are. To prohibit us from the benefit of foreign light is to confine us to long darkness". This statement is relevant for the 73 developing countries mentioned above.

Our land-grant system

We should also remember the sequence of events in the development of our land-grant university and college system as we know

it today. Instruction in agriculture and the mechanic arts was authorized by the Morrill Act of 1862. By 1887 the need for both a federal mandate and federal support for agricultural research were evident and were provided through the Hatch Act. The Smith-Lever Act was passed by the Congress in 1914, providing federal funding for extension. Our world-class teaching, research, and extension institutions in agriculture were not initiated until 86 years after our country's independence, and the completion of institutional development took an additional 52 years. The 73 developing countries mentioned above do not have this luxury of time.

Few will question the fact that the land-grant university and college system has had a positive role in the development of agriculture in the United States. In turn, agriculture has played (and continues to play) a very significant role in the economic development of the country. As a result, foreign students continue to apply, especially for graduate study, to our land-grant institutions in increasing numbers. But, before discussing the assigned topic, let us take a closer look at the implications of the term "development" as we perceive it in applying to the world's developing countries today.

Development

Two development authorities (3) have written: "Development as an increase in the capacity to influence the future has certain implications. First, it means paying attention to *capacity*, to what needs to be done to expand the ability and energy to make change. Second, it involves *equity*; uneven attention to different groups will divide peoples and undermine their capacity. Third, it means *empowerment*, in the sense that only if people have some power will they receive the benefits of development. And finally, it means taking seriously the interdependence in the world and the need to insure that the future is *sustainable*. Unless we recognize and deal with problems of scarcity and finite resources, any capacity we achieve will be very short run". But these implications apply to our own institutions and society as well as they do to developing countries. If so, the incorporation of an international dimension will enhance our domestic teaching, research, and extension programs.

THE MANDATE

The accomplishments of the land-grant system have been realized through a federal-state relationship that responds to local, regional, and national needs and priorities. The federal partner was, quite naturally, the U.S. Department of Agriculture. When the pursuit of agricultural development activities abroad was recognized as being in the best interest of the United States, these activities became the responsibility of the Department of State and are currently implemented by the United States Agency for International Development (USAID). While many land-grant universities and colleges conducted USAID-funded international activities under contract agreements, concern grew that educational institutions had neither a mandate nor funding to sustain continuing long-term involvement in international agricultural development activities.

The passage (in 1975) of Title XII of the Foreign Assistance Act (10) provided a Congressional mandate for the involvement of U.S. colleges and universities, including the land-grant institutions, in the Nation's foreign assistance programs. The wording in the Act speaks to its intention. It provided for "longer term support to the application of science to solving the food and nutrition problems of the developing countries". It authorized programs "to build and strengthen the institutional capacity and human resource skills of agriculturally developing countries so that these countries may participate more fully in the international agriculture problem solving effort and to introduce and adapt new solutions to local circumstances".

The science-based research and institution building intent of the Foreign Assistance Act is clear, and the early collaborative USAID-university efforts in implementing the Act were centered in 2 action committees—the Joint Research Committee and the Joint Country Program Committee. The role for extension was clearly stated in the Act through encouragement of "the planning, initiation, and development of extension services through which information concerning agriculture and related subjects will be made available di-

rectly to farmers and farm families . . . by means of education and demonstration". Cooperative Extension has recently published a policy statement on its involvement in international activities (12).

An additional mandate for international cooperation was included in Title XIV of the 1981 Farm Bill (11), which acknowledged the responsibility of state and federal institutions to "expand international food and agricultural research, extension, and teaching programs". It authorized the Secretary of Agriculture to "assist the Agency for International Development with food, agricultural, research, and extension programs in developing countries" and to "assist U.S. colleges and universities in strengthening their capabilities for food, agricultural, and related research and extension relevant to agricultural development activities in other countries". Clearly, land-grant institutions have a mandate for international agricultural development activities if they choose. Now let us address the title of the paper: Integrating international agricultural development activities in land-grant universities and colleges.

OPPORTUNITIES AND RESPONSIBILITIES

Increasing public awareness of the need for U.S. involvement in international development activities—the need for know—is a recurring theme. The rationale for bringing U.S. resources to bear on world problems has 3 aspects: humanitarian, political, and economic. The U.S. historically has supported humanitarian causes. Our welcoming of refugees from foreign countries and donations for emergency relief are examples. The Commission on International Education of the American Council on Education published a brochure recently titled *What We Don't Know Can Hurt Us: The Shortfall in International Competence* (1), from which the following quotation illustrates our need to know relative to our national security. "The security and prosperity of the United States have come to depend ever more directly on events outside our national control. A revolution in Iran, turmoil in the Horn of Africa, continued confrontation in the Middle East, spreading upheaval in Central America, uncertainty about missile decisions in Western Europe—to name but a few of many troublesome areas—have profound implications for our national security and our economy".

The potential economic benefits for agriculture in world trade have been presented convincingly by Mackie (7) (Table 1) and Kellogg (6). Increasing international interdependence offers many opportunities for expanding the breadth of experience for faculty and students and for meeting their responsibilities as educators and citizens.

Opportunities

Instruction. The presence of foreign students on our campuses offers us the opportunity to learn about other countries, cultures, and agriculture. These foreign students come to learn from us and we provide them the education they request. But too often we do not learn as much from them as we could or should. Establishing meaningful communication with our foreign students to better understand their backgrounds, problems, and potentials is a time-consuming process that requires continuing effort, but yields the rich reward of increased knowledge and understanding.

Table 1. Commercial agricultural imports of selected countries from the United States (1969–71 and 1979–81) in millions of dollars.²

Country	Agricultural Imports (\$1,000,000)		
	1969–71	1979–81	Increase (%)
Japan	1076	7061	556
South Korea	100	1686	1586
Taiwan	127	1150	805
Spain	154	1039	575
Brazil	36	661	1736
Hong Kong	76	436	474
Nigeria	15	349	2226
Egypt	28	332	1085
Indonesia	10	282	2720
Philippines	61	276	352

²Source: Mackie (7).

While I would not argue that different standards be used to evaluate foreign vs. American students, I would argue that by providing faculty the opportunity for foreign experience, instruction will become both more relevant to the home situation of foreign students and enrich the training of American students. Numerous publications are available dealing with the training of foreign students; 3 of these are cited (2, 5, 15).

The words "multidisciplinary" and "interdisciplinary" are commonly heard on our campuses, usually associated with research, but equally applicable to instruction. Certainly one person can teach a course in integrated pest management or breeding for pest resistance in crop plants, but the argument that the instruction should be enhanced by participation of experts in the contributing disciplines is a compelling one in my view. The same type of enrichment of curriculum can be achieved in integrating international with domestic material in the teaching program. Examples would be the offering of agricultural geography by both an agriculturist and a geographer or the offering of agricultural anthropology by both an agriculturist and an anthropologist.

The Kellogg Foundation is currently funding a project to promote agricultural literacy in liberal arts curricula. I believe that our liberal arts colleagues have pursued this opportunity more vigorously than agriculturists have. Graduate seminars or colloquia offer an excellent opportunity to join more diverse subject and faculty interests to interrelate international agricultural development in the instruction program of land-grant institutions.

Research. Faculty members are usually more interested in research opportunities than in purely teaching or extension activities overseas. Research opportunities come in many and varied forms. Most are probably through direct individual contact with colleagues or former students, but many are a part of institution building projects in which the establishment of a research component, system, or network is a project objective. Most of us enter these assignments from the perspective of our own specialty within our own discipline. We are soon overwhelmed to learn that we are expected to know everything about anything! Research management is a particularly pertinent topic in developing countries.

If we accept the premise that research is essential to the generation of knowledge and that any unanswered question identifies the need for new knowledge, we can easily understand how central research capacity is to both the agricultural and national growth of developing countries. We Americans (rightly, in my opinion) defend our graduate training model over that of the traditional European institutions, but we must not forget that with increased specialization within disciplines, and with our locally focused responsibility within the land-grant system, we tend to train our students more in conducting tests and experiments than we do in designing and implementing projects and programs.

Many of our foreign students will be assigned to administrative positions when they return home, and some will become ministers of agriculture. They will need a broader perspective in research management than we usually provide to our own students. How many of our institutions have courses titled "How to Conduct Research" or "The Development of Research Projects and Programs"? We will find many courses titled "Research Methods in _____", which usually revolve around specific instrumentation or techniques. There is a growing volume of literature on research management (i.e., 4, 9, 13), and integrating some of this material into our curricula should enhance the training of both U.S. and foreign students.

Extension. As mentioned above, the Cooperative Extension Service has issued a policy statement on extension's role in international activities (12). Our extension model should be extremely useful in the introduction and adaptation of new solutions to local circumstances in developing countries. But successful extension programs are based on the dissemination of research-based knowledge, and the research base is not yet established or functioning in many developing countries.

Again, better exposure of both our own and foreign students to our extension programs will be mutually beneficial. The national Expanded Food and Nutrition Education Program (EFNEP) is a good example of national, state, and local cooperation and the use

of paraprofessionals in a consumer-oriented program. Horticulturists have much to offer in this area. Our use of subject matter specialists and the incorporation of applied research with extension are also models worthy of consideration for application in developing countries. As in the other functional areas, we have many things to learn from foreign institutions and students that will be useful to us. This may be particularly true in the area of cooperative extension.

Institutional structure. Interrelating international agricultural development in land-grant universities and colleges will (and should) be accomplished on a local-option basis. There is no one institutional model that is superior to others. Two contrasting choices appear to exist. One is the establishment of international agriculture as a 4th dimension to complement the extension, research, and teaching functions. The second is the complete integration of an international component into the functional areas of extension, research, and teaching. The ideal is probably a structure somewhere between these 2 extremes.

Certainly the international agriculture function deserves the same visibility afforded the traditional functions within the organization. While status can be mandated, an enhanced status can also be earned through leadership and commitment on the part of both faculty and administrators.

Responsibilities

As a world power, the United States has a responsibility for leadership in world affairs. Clearly the nations of the world are becoming increasingly interdependent upon one another. Being a collaborative partner with the developing countries in assisting in their agricultural and national development efforts, when invited to do so, is in the best interests of our own country.

Because they form a significant portion of the United States' educational system, the land-grant universities and colleges have a responsibility for the educational, research, and extension functions on behalf of their constituents—including the foreign students accepted in their institutions. So, in both the spirit of the national mandate and the necessity for providing complete and quality education, the integration of international agricultural development with domestic programs is a responsibility of the land-grant universities and colleges of our nation.

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