

## AGRICULTURAL DEVELOPMENT EFFORT ASSESSMENT: THE COLOMBIAN CASE

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Colombia, South America is one of the select countries around the world which has been singled out for intensive developmental inputs on the part of public agencies and institutions, private enterprise and the Foundations. Among the external agencies currently involved in the Colombian development effort are FAO, the Mid-American State University Association (MASUA) administered by Nebraska, an International Tropical Research Institute, the Harvard Development Advisory Service, the Population Council, the Ford, Kellogg and Rockefeller Foundations, and various national development organizations, including those of Sweden and France. Obviously, with such a diversity of endeavor, consideration must necessarily be limited to agriculture, with emphasis on the current Nebraska-MASUA consortium program.

### COUNTRY SETTING

The population of Colombia is approximately 20 million, with about one-half of the population being rural and approximately one-half of the labor force being employed in agriculture. The capital city, Bogota, has a population of two million, and Medellin and Cali each have a population of approximately one million. The population of the country is growing approximately 3.5 percent per year, but the three major cities are growing at a much faster rate as a consequence of high birth rates and rapid rural migration. It is generally conceded that the population of the cities is growing much faster than employment opportunities [9]. Hence, this development has been characterized as urbanization without industrialization.

In 1967, per capita income in the country was approximately \$250, with urban residents receiving approximately \$350, compared to about \$170 for rural residents. Although per capita income has apparently increased very little (approximately 10

percent) during the decade of the 1960's, rural incomes per capita have increased by approximately the same absolute magnitude as have urban incomes. Hence, the rate of income increase of rural residents has been greater.

Data with respect to income distribution patterns in Colombia are a bit obscure, but it is clear that incomes are distributed in a very skewed manner and it appears that the degree of skew is increasing over time and that rural incomes are more skewed than urban incomes [4]. Thus, personal incomes in Colombia are probably diverging while the country average is, to say the least, not gaining relative to developed countries.

All indications suggest that the number of farmers and the number of people engaged in agricultural production will increase in Columbia for the foreseeable future [9]. At the same time, the number of opportunities in commercial agriculture will decline. This paradox is, of course, occasioned by the fact that there is no indication that nonfarm employment opportunities will be created at a rate sufficient to absorb projected new entrants into the labor force. Hence, a large number of people will be forced to retreat to or remain in the subsistence or poverty sectors of agriculture.

### THE COLOMBIAN AGRICULTURAL ESTABLISHMENT

The competence of professional agricultural personnel in Colombia, particularly those in research, was greatly strengthened during the past two decades by Colombian as well as Foundation and other support for graduate education, primarily in the USA. In the mid-1960's, after extensive and intensive studies on the part of Colombian leadership, assisted by USA consultants, the Colombian Agricultural

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Institute (ICA) was created as an autonomous public agency to conduct agricultural research and to coordinate agricultural education in the country [20]. In 1967, national extension responsibilities were also assigned to ICA. In 1968, ICA assumed responsibility for quality control of agricultural inputs, regional development, and numerous other functions. Thus, in terms of the U.S. experience, ICA is now equivalent to USDA and performs several functions performed by the Land Grant University system and by the Food and Drug Administration.

The National University of Colombia offers agricultural instruction on each of its three campuses located in the three major cities of the country. In addition, six state universities (Caldes, Narino, Tunja, Caldes, Tolima and Santa Marta) offer agricultural instruction leading to a degree in Agriculture. Recently, ICA, in cooperation with the National University, has initiated a masters program in the agricultural sciences. Also, one of the state universities offers graduate work in agricultural economics and, in cooperation with National University, offers undergraduate level training in agricultural economics and agricultural engineering.

### THE MASUA PROGRAM

The MASUA-Nebraska agreement with ICA is to provide an interdisciplinary agricultural technical assistance team to assist in the development of a coordinated program of agricultural teaching, research and extension in ICA and the National University. The MASUA-Nebraska Mission in Colombia began building toward an authorized staff of approximately 40 persons during the summer of 1966. The Mission, as of January 1970, has been fully staffed for somewhat more than two years.

In addition to the technical assistance personnel, the program provides a major fellowship program for graduate education, primarily in the USA. The first contingent of fellowship holders educated under this program began returning to the country in 1969. As of December 1969, 90 Colombians were studying in the U.S. under the program, and 12 had returned to Colombia and were working with their sponsoring institutions [6]. In general, Colombian students have taken precisely the same programs as their North American counterparts, and their performance has been exceptionally good.

In view of the appeal of the consortium idea, an interesting analysis could be made of the factors contributing to success in the various consortiums which have been tried, including the MASUA Colombian one. Such an analysis might provide highly useful insights into matters of inter-university cooperation, as well as with respect to relationships

between North American universities and institutions in other countries.

The MASUA-Nebraska project is interesting not only from the consortium standpoint but from the standpoint of multiple sources of financing. Major support has been derived from AID. However, the Ford Foundation is making an important contribution to the support of agricultural economics and the Kellogg Foundation is supporting part of the work in extension education. Multiple funding sources, with varying policies and perhaps objectives, clearly create an administrative challenge. In the initial phases of the Nebraska project, a one-staff concept was defined and adopted. In essence, the government of Colombia and the three sources of financial support agreed that all staff, regardless of source of funding, would be eligible for the same benefits and subject to the same personnel policies. This concept obviously required considerable flexibility on the part of all parties concerned. Yet, it has operated effectively and, one would guess, much more effectively than would have been the case under any other management scheme.

### University Institution Building

Development is seldom noncontroversial. Rather, development is change in political, social and economic institutions as well as in technology, and therefore, often may involve reorganization or replacement of existing systems and institutions. One should not be deluded by thinking that Latin American citizens today are similar to the homesteaders of our West, or that the technology and the institutions that so well served our pioneers can do equally well for the people of Latin America today. Clearly, institution building must be considered to be one of the major objectives of the MASUA group in Colombia. The various teams of USA consultants, which have analyzed the Colombian agricultural scene, have, not surprisingly, unanimously recommended an organization along the North American pattern where research, teaching and extension are coordinated within the context of an institution such as a university. This same image has probably guided most of the activities of the MASUA team.

The Land Grant Institution agricultural structure constitutes one of the most imaginative social inventions of all time. Yet, presumably, these institutions are concrete reflections of the response of a particular society under specific circumstances over a particular period of time. It is not clear that these particular circumstances prevail now in Colombia nor in other developing countries of South America. Thus, it is not entirely clear that the Land Grant system is the only appropriate model for development efforts in that area [22].

In 1969, under the leadership of a dynamic new

Minister of Agriculture (now resigned), the agricultural sector of Colombia was completely restructured. This restructuring must be viewed as a truly revolutionary reorganization of public institutions serving agriculture. Perhaps, it is significant to note that this structuring of the institutions serving agriculture was strictly a Colombian innovation with no inputs from technical assistance personnel, advisors, nor administrators. On the other hand, it should be noted that personnel trained under the auspices of the various external assistance programs remain in key administrative positions in the new organization. Thus, the scientific administrative skills acquired over the years by these workers will not be lost in the new institutional arrangement.

The role of the University and other Institutions in economic, social and political development is a much discussed subject, both in the U.S. and abroad. Consideration of whether or not Colombian Universities and agricultural institutions are a vital force generating change and transformation of the country is beyond the scope of this discussion. However, it has been argued that agricultural economists and other scientists in the U.S. are becoming increasingly discipline oriented rather than problem or objective oriented [22]. If this is the case, and the evidence is convincing, it may not be particularly serious in the U.S. with its abundant resources and sophisticated infrastructures linking public and private agencies to public affairs decisionmaking. However, this is not a trend to be exported to developing countries where such linkages are poorly developed.

#### CONTRACT STAFFING PATTERNS

Despite university emphasis on institutional building in other countries, Land Grant institutions have been somewhat less than successful in institutionalizing international development activities within their own campus settings. Even in 1970, there are an extremely limited number of career-related international development opportunities available in the USA agricultural establishment. To my knowledge, there is no development in the Land Grant system that parallels, for example, the Harvard Development Advisory Service.

Perhaps the typical person with international experience may be an individual who has taken a two-year leave of absence from his own institution to work for another university contract abroad. Thus, typically he has had little or no specialized professional preparation for an overseas assignment, particularly as it relates to institutional building in a different setting. Further, when he returns to his home institution his domestic duties are seldom even peripherally related to his overseas assignment. Thus, from the standpoint of the individual, the inter-

national assignment is often noncareer related and noncareer continuous. From the standpoint of the university, the structure is not present to permit the staff members' newly-gained insights to contribute to ongoing university activities.

The Colombian program is a very large one and which few institutions could staff with permanent faculty members from their own university. This, of course, was the basis for the MASUA consortium on the Colombian project. Although several strong agricultural colleges are included among the consortium members (Nebraska, Kansas State, Oklahoma State, Missouri, Iowa State and Colorado), and that the original concept was that of permanent faculty of the MASUA institutions performing the technical assistance duties in Colombia, the project to date has not been primarily staffed by permanent faculty of the MASUA member Universities. A somewhat crude summary of staffing patterns, to date, is contained in Table 1.

Little has been written relative to optimum size of technical assistance teams. Perhaps, the range in size should be between that which constitutes a critical mass and that which tends to result in a program effort essentially independent of country programs and institutions. When the team is small, it is probably easier for the group to work within an institution and with nationals. As the team becomes larger, given language and cultural barriers, there may be a tendency to create enclaves within the national institution with goals and objectives only loosely related to those of the host institution. Such a development may well result in excellent research but in little upgrading of national personnel or institutional capacity to perform when the technical assistance team leaves.

In the plant sciences, ICA and National University had the capacity to absorb a large technical assistance team. Yet, even in this area, this ratio of technical assistance personnel was probably high relative to successful Rockefeller experience in Mexico, and certainly in Colombia. In agricultural economics, the original staffing plan involved five senior professors and three post prelim instructors. In retrospect, the program in Bogota may have been overstaffed initially. At that time, there was only one Colombian in the Bogota program with the M.S. degree.

#### BUILDING RESEARCH COMPETENCE

Most would agree that a necessary ingredient of agricultural development is significant technological breakthroughs which can be developed only by a strong program of adaptive agricultural research. This is a major shift in thinking from the early 1950's when most would have argued that ample technology was available, but that a strong extension program to

gain adoption of known technology was needed. This misreading of evidence is no doubt one of the major reasons most university development programs have had a strong bias toward concentration of investments in extension activities as opposed to basic or applied research [18].

Perhaps, there are two basic research philosophies relevant to international agriculture development. The one school of thought would suggest that researchers are most productive if permitted and encouraged to follow individual interests and leads. The other would suggest that given limited funds, certainly typical of the underdeveloped world, research should be mission-oriented or mission-directed. Under this philosophy, objectives would be established and research specifically designed to remove impediments to the attainment of the stated objectives [3].

There is considerable evidence to suggest that agricultural research activities in South America tend to be remarkably similar to current activities in the USA. Some have characterized this phenomena as North Americanization of South America research. This is not surprising in view of the emphasis on the USA for graduate education. However, one would be surprised if mission-oriented research on the two continents would lead to similar projects and approaches.

One observer of the Colombian scene has suggested that most of the corn producers in Colombia utilize primitive techniques often on rather low quality soil. Yet, there have been numerous field days demonstrating improved corn production methods for large-scale producers but no field days emphasizing improved production technology for small-scale

**TABLE 1. SELECTED CHARACTERISTICS OF STAFF AND FORMER STAFF, MASUA-NEBRASKA COLOMBIAN PROJECTS AS OF DECEMBER 31, 1969**

Item	Number
<b>General Information</b>	
Employed . . . . .	.50
Returned . . . . .	.20
Three Months or More Previous International Experience . . . . .	.24
Served Two Years or Less in Colombia . . . . .	.20
<b>Previous Staff Position</b>	
MASUA Institutions . . . . .	.21
With Leave . . . . .	(13)
Nebraska . . . . .	6 <sup>1</sup>
With Leave . . . . .	(4) <sup>1</sup>
Other Universities . . . . .	.11
Other (Including Graduate School) . . . . .	.18
Total	50

Source: University of Nebraska, Office of International Programs.

<sup>1</sup>Included in MASUA figures.

producers [8]. If agricultural technology is scale selective, improvement of agricultural technology for large-scale producers would tend to benefit a limited number of producers in Colombia, while many producers may be injured, both in an absolute and relative sense, through product price impacts. This would tend to further skew income distribution within the farming sector and within the total economy. The so-called second generation problems will be of increasing concern to agricultural economists and others interested in international development in South America [14].

No one would seriously argue that a simple redistribution of income would solve economic and social problems in South America. Yet, the marginal distribution of benefits in developing countries would appear to be more critical than in a country such as the U.S. Perhaps, a highly skewed pattern of income distribution can be altered only at cost of total product. The evidence on this point is far from clear, yet in Latin America the social justice dimension cannot well be ignored. Would research show that agricultural technical assistance programs have been regressive in their impact? If distribution and total product goals are competitive, what combination of the two is optimum?

There is considerable literature now appearing in the development field which compares and contrasts the Mexican and Japanese-Tawian models of agricultural development [13]. It is significant that in the case of rice, improved technology in Japan has been widely dispersed among small and large producers, while in South American countries, productivity improvements in rice appear to have been largely restricted to large scale producers under mechanized-irrigated conditions. In the Japan-Mexico comparison, are these differences in the physical or human resources or differences in the manner in which agricultural research has been directed?

Obviously, it is possible that technology is neutral with respect to scale but that institutional factors, such as systems of land tenure and pricing of resources and products, tend to skew benefits. Thus, it is possible that researchers creating labor saving technology are reacting to the felt problems of commercial farmers faced with such a set of factor prices.

In general, the background and experience of South American workers tend to be different from those in North America. This is largely due to the fact that although education is difficult and expensive to obtain throughout Colombia, it is particularly difficult in rural areas. As a consequence of this, university students are not from rural areas. Further, some have suggested that agriculture has not historically

been a prestige profession in Colombia. Hence, many students may have matriculated in the faculty of agronomy because they could not gain admission to more prestigious faculties such as the faculty of medicine or law. Whether or not this is, in fact, true, or whether it is indeed different from the U.S. situation, is debatable. Nevertheless, one might expect persons with urban backgrounds to view research priorities in a somewhat different light than those with a more rural background.

The first two international agricultural research institutes (IRRI and CIMMYT) have shown that concentrated effort on narrowly defined, mission-oriented problems can achieve highly significant research results. Whether the same success will be achieved by the two newer institutes (CIAT and ITTA) is yet to be determined. However, it should be noted that these institutions are not country institutions and are free from many of the limitations and restraints which plague the development of first class research competence in individual countries, including the U.S. In fact, it has been suggested that the creation of international center system may lull developing countries into a sense of complacency which might inhibit the development of indigenous country research institutions. There is, however, no real evidence that this is occurring. It should be clear that the international institutes are extremely small relative to research needs in the developing world and are in no sense a substitute for development of individual country research and education competency.

### NEW TEACHING PROGRAMS

At the time the MASUA-Nebraska agreement with ICA was finalized, Colombian competence was much greater in the plant sciences than in the other fields of agriculture. This was, of course, due to the strong Rockefeller Foundation emphasis on the plant sciences. In the teaching area, the nine campuses offering undergraduate work in agriculture offered the ingeniero-agronomo degree and two offered a degree in veterinary medicine. The ingeniero-agronomo degree has typically been a five year university degree which might be likened to a degree in general agriculture in this country but with more emphasis on the plant sciences. Thus, there were no programs in animal sciences, and no specialization in the various other agricultural fields.

As a consequence of the work of the MASUA-Nebraska mission, work in the animal sciences is now offered in National University and the veterinary medicine curricula has been greatly strengthened by increased emphasis on clinical activities. In addition, undergraduate programs (careers) in agricultural economics and agricultural engineering have been initiated within the National University program. An

earlier Michigan State contract, along with the Wisconsin Land Tenure Center and FAO, has resulted in the training of several agricultural economists to the M.S. level. Also the Rockefeller Foundation and the University of the Valley had initiated some training in agricultural economics. Yet, the profession was essentially initiated by the MASUA group. The same can be said for agricultural engineering.

Several consultant teams which studied the Colombian agricultural situation in the early 1960's recommended the establishment of graduate programs in agriculture within Colombia. A small graduate program in agricultural economics, at the masters level, was initiated by the University of the Valley with Rockefeller Foundation support in 1968. At the same time, an agreement between ICA and National University established ICA-National University cooperation for the purpose of offering advanced training in various agricultural sciences. Thus, the ICA-National University graduate school currently offers the M.S. level training in the various plant sciences, animal sciences, agricultural economics, agricultural engineering, entomology, and extension-communications.

Without the assistance of the MASUA-Nebraska team members, it may have been impractical for Colombia to offer undergraduate work leading to specialization in agricultural economics, agricultural engineering, nor the animal sciences, and the initiation of graduate training would have been difficult. In the longrun; the establishment of graduate training competency within Colombia may constitute the major contribution of the MASUA-Nebraska group. If South American agricultural institutions and research do tend to be overly "gringoized", then what is needed is the development of indigenous professions concerned with South American problems and possibilities. Perhaps, the most effective way of achieving such an indigenous profession is the establishment of indigenous training institutions.

Given the current Colombian competence and the availability of large numbers of North Americans in Colombia, there is no reason that graduate training in Colombia should be inferior in any way to that in the U.S.A. Further, given the rapidly growing scientific competence within the Colombian community, there is no reason that all of the teaching at the Masters level should not be done by Colombians. Further, in certain areas of the plant sciences, there is probably sufficient Colombian competence to offer the Ph.D. degree.

There is reason to think that Colombia has the potential to make a major contribution to Latin American agricultural education on a regional basis. There has been a tendency in much of Latin America

to isolate agricultural training from general university education. For example, agricultural graduate training centers in Brazil, Mexico and Peru are located in agricultural schools or universities that do not offer broad range university training. On the other hand, National University in Bogota, the site of the ICA-National University graduate program, is a complete university. Given the excellent supporting work in general economics, basic sciences, statistics, etc., it would appear more feasible to develop quality doctoral programs in the agricultural sciences than would be the case in the more limited agricultural type university. It should be noted, however, that there are other universities, for example, those in Chile and Argentina, that appear to have advantages similar to those in Bogota.

### SUMMARY QUESTIONS—INFERENCES

1. *Can the development of competence in international agricultural technical assistance be institutionalized as a part of the role and mission of the Land Grant system?*

AID directors, including Dr. Hannah, have emphasized the importance of the University-AID partnership. However, if the university role is restricted to that of acting as an administering agency to assemble a staff to perform a specific job with no previous or subsequent relationship to ongoing activities, real benefits to the university are not obvious. Further, if the university is to rely largely on free agent professional staff, as opposed to permanent faculty, in such work, it is not clear that AID could not perform the role equally well. If a relatively large permanent AID staff is not considered to be feasible, private enterprise offers one alternative to the university. One can hardly fail to be impressed with the magnitude of the agricultural assistantship programs currently being carried out by private companies.

Clearly, what is needed is a continuing evaluation of the university's role in international affairs as well as continuing considerations of university relationships with USAID and other funding agencies. Some universities have taken major steps to identify objectives and to structure programs in the international development area [17]. Others appear to be operating on a rather ad hoc basis. AID-University relationships have been under continuous review and major changes appear to be in the offing [12, 16].

The degree to which Land Grant universities find it possible to institutionalize international development will depend to a large extent on the funding agencies, primarily, USAID. There is little reason to expect that the individual states will undertake major financing of international development faculties. The foundations, through resource base grants, have in

several cases provided such funding. USAID has also made such major investments. Clearly, if the international development function is to be institutionalized within the Land Grant system, the system must have funding to offer career appointments in the field.

2. *Should all Land Grant universities attempt to develop comprehensive international development competency?*

In the past, practically all Land Grant universities have been engaged in one or more international development activities. Would the interest of the universities and the developing countries best be served if a limited number of universities develop really quality international programs? An alternative would be for different universities to specialize in different phases, on a geographic or functional basis, of international development. Either alternative might permit a more professional development of competence in international faculties involved in international activities both on and off campus. It should be abundantly

clear, after two decades, that if one is to develop expertise in international development he must be exposed to international environments, but that this exposure must be supported by research and teaching on the home campus.

3. *Will there be continuing demand for agricultural technical assistance in what is now the developing world?*

Despite two decades of rather intensive developmental activity, the gap between the have and have not nations has widened. At the same time, it is becoming clear that the objectives of agricultural development must shift from the simplistic one of increasing food production to the more difficult one of contributing to general economic development and social justice. As objectives become more complex, national programs must also become more complex. Is it obvious that developing countries will continue to seek or accept university agricultural personnel to attack the emerging later generation problems?

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