

I. Summary Description

As discussed in Section II, it is urgent that Nicaragua undertake the necessary measures to increase food production and to develop more efficient means of market distribution. An expanded program of applied research, and development of improved marketing practices are essential elements of such an undertaking. This activity also will complement other programs in the rural sector, including soil conservation and irrigation, expanded rural credit, land titling, agricultural extension, and other agricultural programs now in progress.

The application of applied research, the development of increased research competence within the Ministry of Agriculture and the development of improved agricultural marketing program will assist in increasing food production at the rate of about 5% per annum over the short run, increase export potential, contribute to overall agricultural diversification, and reduce dependence of the economy on the two principal export crops; cotton and coffee.

Applied research on basic food grains, forage crops, pork and milk production will be expanded and intensified. Improvement in the quality of forage crops will lead to greater efficiency of beef and milk production, both important elements of the economy. The development of an efficient marketing and distribution system will facilitate the transfer of agricultural products to the final consumer, thereby improving his standard of living. At the same time the marketing program will enable the producer to more efficiently dispose of his products thereby reducing his costs and increasing his share of the final price to the consumer. The combination of these two factors will be to increase sales at effective prices, thereby stimulating agricultural production.

The Government of Nicaragua (GON) will, through normal budgetary procedures, provide the necessary financing for staffing and operational support for the expanded applied research program and for the agricultural marketing activities, for which assistance is provided under the provisions of this project.

The U.S. inputs are summarized in Table I. The funding shown in Table I will be used to finance resident contract technicians, short-term consultants, backstopping and support costs, and participant training. Three full-time resident technicians are required in the applied research phase and three in the marketing phase of the project.

Activities of the resident technicians will be reinforced by short-term consultants as required. It is estimated that up to 12 man-months per year will be required for this purpose; however, exact phasing will depend on the rate of project development.

II. Setting

As is common throughout Central America, the agricultural sector has been the most important sector in Nicaragua's economy. It continues to employ more than half of the labor force, produces 29 percent of the GDP and more than 60 percent of export earnings.

There is, however, a distinct technological dualism in Nicaragua's agricultural sector. For example, in 1966, 95% of the mechanical power, 96% of the insecticides, and 53% of the fertilizers used in the country was devoted to the production of cotton, the number one export crop of the country. In contrast, small holdings, primitive cultivation and soil management methods and, therefore, low productivity characterized the operations of the approximately 75,000 subsistence farmers who account for the bulk of food production. Net imports of cereals and cereal products amounted to \$5,629,668 in 1967, approximately one half of which was rice and corn. By 1969, Nicaragua had reached near self-sufficiency in rice and corn and exported small quantities to Central America and other markets. Storage and marketing difficulties, however, have depressed producers' prices to such an extent that they are considering other production alternatives.

The high yield potential of the basic grain crops in Nicaragua, and the demonstrated potential for increased livestock production, offer attractive alternatives to the traditional export crops now in world surplus, provided: (1) greater use is made of modern production technology; (2) provisions are made to facilitate efficient transfer of the products from the farm to the consumer and if products are assured of an equitable share of the consumer price.

The CON agencies concerned with the agricultural sector are steadily increasing their capacity to deal with the problems of land tenure, extension, credit, marketing, storage and related services. However, there is an acute shortage of highly qualified skilled agricultural technicians, and the development of new techniques to increase the efficiency of food production is lagging. There is an urgent need to intensify and expand the applied research activities related to improved animal nutrition (including forage and pasture production), varietal improvement, rate and kinds of fertilizer applications, and insect and pest control in order to increase the efficiency of food production. Of equal importance is the improvement of storage, processing and marketing policies and programs to facilitate the efficient transfer of farm products from the farm to the consumer. A broader description of the agricultural situation may be found in the 1971 Country Field Submission.

III. Strategy

This project will support the expansion of, and strengthen the applied research activities of the Ministry of Agriculture as well as the agricultural

marketing program of the GON. Funding will be provided in this project to defray costs of contractual arrangements to be made by the Ministry of Agriculture with one or more U.S. institutions. These will provide technical services to assist Nicaraguan technicians to develop and implement appropriate programs of applied research for basic grain crops, (including rice, corn, sorghum and beans), forage crops and animal nutrition; improved practices to increase milk and pork production; and for the development of an improved agricultural marketing program.

The program is an essential ingredient in the Mission's overall strategy for agricultural development in Nicaragua. The research phase of the project will assist in increasing yield and quality of basic crops in Nicaragua. The marketing phase is essential to assure that an efficient and economic marketing system is developed in Nicaragua to assist in reducing costs of transportation, increasing the share of farmer's income in the final cost of the product, reduce final costs to the consumer, and open up new channels both of supply and demand. The other Mission programs to increase agricultural production, yield, and efficiency will be effective to the extent that a modern storage, distribution and marketing system can be developed.

The Ministry of Agriculture, which has a small staff of agriculturists presently working on applied agricultural research, is a logical location for the applied research activities. Agricultural marketing activities will be located in an appropriate existing institution for administrative purposes, but policy will be established by a marketing board made up of both public and private representatives.

This project will complement and enhance the effectiveness of related programs of Institutional Development and Irrigation Development that the Ministry of Agriculture is currently carrying out with AID assistance. It will also complement USAID assistance to the National Bank as well as financial and technical assistance being provided the agricultural sector by IDB, IDA and other sources.

IV. Planned Features, Results and Outputs

In addition to upgrading the technical and administrative competence of the Ministry and other GON institutions engaged in carrying out development programs and increasing agricultural production, a large number of specific accomplishments are expected to take place during the life of the project. Those related to the agricultural marketing component of this project, consist of, but are not limited to the following:

1. Increase of off-farm grain storage from 100,000 tons to 323,000 tons.
2. Initiation of a program of on-the-farm grain storage that will include design of appropriate facilities and erection of structures on some 500 farms.

3. **The initiation of a livestock marketing program and establishment of four separate markets in the major livestock production areas. These markets will be privately owned and operated.**
4. **Refinement of standards and grades of grains and beans on which prices are based and use of such standards and grades in regional and international commerce.**
5. **Reduction of the amount of rice broken in the milling process from 50 to about 20 percent.**
6. **Plan and stimulate the erection of produce assembly and packing sheds in the producing areas. The target is three such facilities.**
7. **Incorporate grades into the beef trade and promote the sale of beef based on grade. The target is to achieve the sale of all beef for export based on quality in lieu of the present indiscriminate pricing procedures.**
8. **Establishment of an office to support the improvement of the marketing structure in one of the existing governmental agencies, and a marketing board composed of public and private leadership to establish market policy.**

The benefits that will accrue to producers, middlemen and consumers from these targets are impossible to quantify, but if the project is conducted with the support that it merits, the benefits will be many-fold. This project alone is not expected to do all of the things envisioned. The physical and support requirements will be provided by Nicaraguan public and private entities with this project serving as a catalyst and coordinator of the overall marketing effort.

Since action has not yet been initiated in many of the target areas, it is difficult to precisely state how fast accomplishments can be expected. The grain storage facilities should be completed by 1971. The erection of on-the-farm storage facilities should be initiated in 1970 and the number indicated above completed by 1972. By that time, plans should be firm for storage on additional farms. At least one livestock market should be functioning by 1971 and four in operation by 1976. Grain standards and grade refinement should be made in 1970 and in use by the price stabilization agency (INCEI) in 1971, with further refinements to be made thereafter. Actions to improve the milling quality of rice from an agronomic standpoint were initiated in 1968. This aspect will be expanded annually through 1975. Improvement of milling operations should result in an additional amount of whole grain rice amounting to 300,000 bags annually with a value of about three million dollars. Hopefully, the produce collection and packing sheds can be erected and placed into operation during the 1972-74 period at the rate of one each year. Efforts will be made to deal with the problem of beef quality and grades in 1970-71 and incorporation of new standards by 1975. Present plans point toward the establishment of a marketing office in

1970. Improving the technical and administrative competence of the personnel will be a continuing important part of the project.

It is far more difficult to establish specific targets and benchmarks to measure accomplishments for the applied research aspects of this project. The primary aim here is to build on the existing inadequate institution and expand and improve current activities to the maximum extent possible & given the level of support provided annually by the GON for this purpose.

Applied research for the purpose of improving the efficiency of rice production was initiated in 1968. This aspect of the work will be continued through the life of the project and is scheduled to incorporate rice breeding by 1975. Efforts to improve the quality and increase the levels of animal nutrition were initiated in 1968, and will be expanded and continued throughout the life of this project. The quality of research on other crops including forages will be formalized, refined and extended to outlying areas to the extent that resources permit. In the event adequate support, financial and manpower are not forthcoming, this as well as other aspects of the project will be terminated prior to date shown above.

V. Course of Action

Assistance provided through this project makes it possible for the Ministry of Agriculture to enter into contractual arrangements with one or more U.S. institutions to provide the desired technical services. A contract financed from FF-1968 funds with Louisiana State University (LSU), provided for three full time resident technicians: two agronomists, one animal scientist, and 12 man-months of short-term assistance. The USAID has entered into a project agreement with the Ministry of Agriculture to provide funding from FF-1969 funds to extend the technical assistance in the plant and animal sciences through December 1969, and to initiate a program in agricultural marketing with three full-time resident technicians: two agricultural economists and one agricultural engineer, and up to 6 months of short term assistance.

Activities of the agronomists will include but not be limited to:

- 1) Variety testing.
- 2) Testing of cultural practices such as levels of fertilizer use, methods of weed control, levels of application of irrigation water, and insect control.
- 3) Milling quality and acceptability of the grain for food and feed.

- 4) **Storage problems.**
- 5) **Introduction and testing of new plant materials and new crops.**
- 6) **On-the-job training of counterpart personnel in the conduct of applied research from a technical and administrative standpoint, and**
- 7) **Summarization and publication of results of the work on an annual basis with recommendations for application to farm practices.**

The animal scientist will direct his efforts toward:

- 1) **Development of sound production programs that will result in expanded, more efficient production of pork and milk.**
- 2) **Formulation and testing of improved s feed concentrate mixtures that will reduce the cost of pork and milk production.**
- 3) **Improving sanitary practices in the production of livestock.**
- 4) **Participation in training activities aimed at expanding the use of improved animal management practices.**
- 5) **Training of counterparts in all aspects of improved management of farm animals with emphasis on swine and dairy animals.**

In the agricultural marketing phase of the project, the agricultural economists will give priority to:

- 1) **Market evaluation for selected crops.**
- 2) **Appraisal of domestic and export market potential for selected crops.**
- 3) **Making recommendations for economic adjustments in storage and processing.**
- 4) **Developing recommendations for improvements in marketing channels.**
- 5) **Developing market information on production, demand, price trends and variation in prices.**
- 6) **Advising GUN officials on the development of price policies, and**
- 7) **Advising GUN officials on how to distribute demand, supply and price information to producers, distributors and consumers.**

The agricultural engineer's duties will include but not be limited to advising the GON on:

- 1) The design of storage and handling facilities for agricultural products.
- 2) Types of processing and packaging machinery and equipment required for efficient processing of Nicaraguan agricultural products.
- 3) Improvements needed in the handling and transport of agricultural products, and
- 4) Structural materials and systems for cost reduction.

The GON will, through its normal staffing and budgetary procedures, provide local technical staff and support personnel to carry out the objectives of the project; office space, equipment, and supplies; suitable land areas for experimentation; adequate and appropriate transportation for project personnel and such other essential items of support as may be required for the success of the project.

In 1969, the Ministry budget allocated approximately \$462,000 to agricultural experimentation and research, of which it is estimated that approximately \$205,000 contributes directly to the support of the objectives of this project. Other GON institutions are presently expending well in excess of one million dollars annually in support of the objectives of this project.

At least five years operations will be required to realize project objectives. During this period of time the project will have contributed to training a staff of Nicaraguan technicians in the administration of research programs, in techniques of applied research and in the development and execution of more effective marketing programs. Research and marketing programs of the type envisioned, to be most effective, however, must be carried out on a continuing basis over a much longer period, and the relative degree of success will be determined to a large degree by the quality of human resources and the budgetary support provided by Nicaragua over an extended period of time.

NONCAPITAL PROJECT FUNDING (OBLIGATIONS IN \$000)

COUNTRY: NICARAGUA Project Title: AGRICULTURAL PRODUCTION AND DIVERSIFICATION

PROP DATE Mo/Day/Yr./
Original 7 31 68

Rev. No. 7 25 69
Project No. _____

Fiscal Years Ap	L/G	Total Cost ^{1/}	Personnel Serv.			Participants		Commodities		Other Costs	
			AID	PASA	CONT	U.S. Agencies	CONT	Dir U.S. Ag.	CONT	Dir U.S. Ag.	CONT
Prior through Act. FY 1969		425	425		425						
Oper. FY 1970		225	200		200	25					
Budget FY 1971		375	350		350	25					
B + 1 FY 1972		375	350		350	25					
B + 2 FY 1973											
B + 3 FY 1974											
All Subs.											
Total Life		1,400	1,325		1,325	75					

^{1/} Memorandum (nonadd) column

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